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Stantec

88100091

April 1, 2002

Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, VA 22304

Subject: **Conditional Letter of Map Revision (C-LOMR) request for Green Park Channel/Culvert System for Flood Insurance Rate Maps (FIRM) 32003C2568 D, 32003C2569 D, and 32003C2910 D**

Attention: **Ms. Pernille Buch-Pedersen**

Dear Ms Buch-Pedersen:

Stantec Consultants is submitting the Green Park Channel/Culvert System for your review and approval of this Conditional Letter of Map Revision (C-LOMR) request. Enclosed within this request is the hydraulic analysis, HEC-RAS and WSPG, for the future Green Park Channel/Culvert System. Also provided are the C-LOMR application forms, ALTA (Plat Maps), and a revised flood map showing that effect of the Green Park Holdings development. The Green Park Channel/Culvert System is comprised of two distinct conveyance facilities, the North Box and the South Box. The basis of this C-LOMR request is the revised hydrology determined by G. C. Wallace for the Duck Creek Flood Insurance Study (FIS) that is also being submitted at this time.

Buildings

Environment

Industrial

Should you have additional questions and/or require further information please do not hesitate to call Alexander Kingston at Stantec Consultants at (702) 258-0115

Transportation

Urban Land

Sincerely,
STANTEC CONSULTANTS

Alexander Kingston, E.I.T.
Senior Hydrologist

FEDERAL EMERGENCY MANAGEMENT AGENCY REVISION REQUESTER AND COMMUNITY OFFICIAL	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 2.13 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. REQUESTED RESPONSE FROM FEMA

This request is for a:

☒ CLOMR A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60,65 & 72).

☐ LOMR A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, floodway or flood elevations. LOMRs typically decrease flood hazards. (See 44 CFR Ch. 1 Parts 60 & 65.)

☐ Other Describe: _____

2. OVERVIEW

1. The basis for this revision request is (are): (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data ☒ Floodway Revision

☐ Other Describe: _____

Note: A photograph is not required, but is very helpful during review.

2. Flooding Source: Duck Creek

3. Project Name/Identifier: Green Park Channel/Culvert System

4. FEMA zone designations affected: "AE" "A"

(example: A, AH, AO, A1-A30, A99, AE, V, V1-V30, VE, B, C, D, X)

5. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	Katy, City Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
32003	Clark County	NV	32003C	2569D	08/16/95
				2568D	08/16/95
				2010D	08/16/95

6. The area of revision encompasses the following types of flooding and structures. Check all that apply.

Types of Flooding	Structures
☒ Riverine	☒ Channelization
☐ Coastal	☐ Levee/Floodwall
☐ Alluvial fan	☒ Bridge/Culvert
☐ Shallow Flooding (e.g. Zones AO and AH)	☐ Dam
☐ Lakes	☐ Fill
☐ Other (describe)	☐ Other (describe)

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

4. ENCROACHMENT INFORMATION

1. Does the State have jurisdiction over the floodway or its adoption by communities participating in the NFIP? ☐ Yes ☒ No

If Yes, attach a copy of a letter notifying the appropriate State agency of the floodway revision and documentation of the approval of the revised floodway by the appropriate State agency.

2. Does the development in the floodway cause the 1% annual chance (base) elevation to increase at any location by more than 0.000 feet? ☐ Yes ☒ No ☐ N/A

3. Does the cumulative effect of all development that has occurred since the effective SFHA was originally identified cause the base flood elevation to increase at any location by more than one foot (or other increase limit if community or state has adopted more stringent criteria - even if a floodway has not been delineated by FEMA)? ☐ Yes ☒ No

If the answer to either items is Yes, please attach documentation that all requirements of Section 65.12 of the NFIP regulations have been met, regarding evaluation of alternatives, notice to individual legal property owners, concurrence of CEO, and certification that no insurable structures are impacted.

5. MAINTENANCE RESPONSIBILITY

The community is willing to assume responsibility for ☐ performing ☒ overseeing compliance with the maintenance and operation plans of the Green Park Channel/Culvert System (Name) flood control structure. If not performed promptly by an owner other than the community, the community will provide the necessary services without cost to the Federal government.

Operation and maintenance plans are attached. ☐ **Yes** ☒ **No** ☐ **N/A**

6. REVIEW FEE

The review fee for the appropriate request category has been included. ☒ Yes Fee amount: $3,100.00

OR

This request is based on a federally sponsored flood-control project where 50 percent or more of the project's cost is federally sponsored, or the request is based on detailed hydrologic and hydraulic studies conducted by Federal, State, or local agencies to replace approximate studies conducted by FEMA and shown on the effective FIRM; thus the project is fee exempt. ☐ Yes

Please see Instructions for Fee Amounts

7. SIGNATURE

***Note:* I understand that my signature indicates that all information submitted in support of this request is correct**

Alexander Kingston
Signature of Revision Requester

Alexander Kingston
Printed Name and Title of Revision Requester

Stantec Consulting
Company Name

(702) 258-0115
Telephone No. Date

***Note:* Signature indicates that the community understands, from the revision requester, the impacts of the revision on flooding conditions in the community.**

Signature of Community Official

Printed Name and Title of Community Official

Community Name

Telephone No. Date

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is in accordance with 44 CFR Ch. 1, Sect 65.2

DENNIS J. WERTZLER
Signature

DENNIS J WERTZLER
Printed Name and Title of Revision Requester

Registr No. 11970 Expires (Date) 11/16/07 State NV

Type of License/Expertise: CIVIL

Check which forms have been included with this request

Form Name and (Number)	Required if .....
☐ Hydrologic (3)	new or revised discharges
☒ Hydraulic (4)	new or revised water-surface elevations
☐ Mapping (5)	floodplain/floodway changes
☒ Channelization (6)	channel is modified
☒ Bridge/Culvert (7)	addition/revision of bridge/culvert
☐ Levee/Floodwall (8)	addition/revision of levee/floodwall
☐ Coastal (9)	new or revised coastal elevations
☐ Coastal Structures (10)	addition/revision of coastal structure
☐ Dam (11)	addition/revision of dam
☐ Alluvial Fan (12)	structures proposed on alluvial fan

FEDERAL EMERGENCY MANAGEMENT AGENCY RIVERINE/COASTAL MAPPING	O.M.B No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.5 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Note: Fill out one form for each flooding source studied

Community Name: Clark County

Flooding Source: Duck Creek

Project Name/Identifier: Green Park Channel/Culvert System

This is a ☒ Manual ☐ Digital submission. *Digital map submissions may be used to update digital FIRMs (DFIRMs). For updating DFIRMs, these submissions must be coordinated with FEMA Headquarters as far in advance as possible.*

1. MAPPING CHANGES

1. A topographic workmap must be submitted showing the following information (check N/A when not applicable):

a. Revised approximate 100-year floodplain boundaries (Zone A)	☒ Yes	☐ No	☐ N/A
b. Revised detailed 100- and 500-year floodplain boundaries.	☒ Yes	☐ No	☐ N/A
c. Revised floodway boundaries	☒ Yes	☐ No	☐ N/A
d. Location and alignment of all cross sections with stationing control indicated.	☒ Yes	☐ No	☐ N/A
e. Stream alignments, road alignments and dam alignments.	☒ Yes	☐ No	☐ N/A
f. Current community boundaries.	☐ Yes	☐ No	☒ N/A
g. Effective 100-year floodplain and floodway boundaries from FIRM/FBFM reduced or enlarged to the scale of the topographic workmap	☒ Yes	☐ No	☐ N/A
h. Tie-ins between the effective and revised 100-, 500-year and floodway boundaries	☒ Yes	☐ No	☐ N/A
i. The requester's property boundaries and community easements	☒ Yes	☐ No	☐ N/A
j. The signed certification of a registered professional engineer	☒ Yes	☐ No	☐ N/A
k. Location and description of reference marks	☒ Yes	☐ No	☐ N/A
l. Vertical datum (example: NGVD, NAVD)	☒ Yes	☐ No	☐ N/A
m. Coastal zone designations tie into adjacent areas not being revised	☒ Yes	☐ No	☒ N/A
n. Location and alignment of all coastal transects used to revise the coastal analyze	☐ Yes	☐ No	☒ N/A
o. V-zone has been delineated to extend landward to the heel of the primary frontal dune	☐ Yes	☐ No	☒ N/A

If any items are marked No or N/A please attach an explanation.

2. What is the source and date of the updated topographic information (example: orthophoto maps, July 1985; filed survey, May 1979, beach profile, June 1987 etc.)?

Orthophoto/Grading Plan Map October, 2000

3. What is the scale and contour interval of the following workmaps?

Effective FIS	Scale 1"=400	Contour Interval 4-foot
Revision Request	Scale 1"=400	Contour Interval 4-foot

NOTE: Revised topographic information must be of equal or greater detail than effective.

4. Attach an annotated FIRM/FBFM at the scale of the effective FIRM/FBFM showing the revised 100- and 500-year floodplain and the floodway boundaries and how they tie into those shown on the effective FIRM/FBFM downstream and upstream of the revisions or adjacent to the area of revision for coastal studies. **FIRM/FBFM attached?** ☒ **Yes** ☐ **No**

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

2. EARTH FILL PLACEMENT

1. The fill is: ☒ Existing ☐ Proposed

2. Has fill been/will be placed in the regulatory floodway? ☐ Yes ☒ No
   If Yes, please attach completed Riverine Hydraulic Analysis Form (Form 4).

3. Has fill been/will be placed in floodway fringe (*area between the floodway and 100-year floodplain boundaries*)? ☐ Yes ☒ No

   If Yes, then complete A, B, C, and D below.

   a. Are fill slopes for granular materials steeper than one vertical on one-and-one-half horizontal? ☐ Yes ☐ No

      If Yes, justify steeper slopes _____

      _____

   b. Is adequate erosion protection provided for fill slopes exposed to moving flood waters? (*Slopes exposed to flows with velocities of up to 5 feet per second (fps) during the 100-year flood must, at a minimum, be protected by a cover of grass, vines, weeds, or similar vegetation; slopes exposed to flows with velocities greater than 5 fps during the 100-year flood must, at a minimum, be protected by stone or rock riprap.)*

      ☐ Yes ☐ No

      If No, describe erosion protection provided _____

      _____

   c. Has all fill placed in revised 100-year floodplain been compacted to 95 percent of the maximum density obtainable with the Standard Proctor Test Method or acceptable equivalent method? ☐ Yes ☐ No

   d. Can structures conceivably be constructed on the fill at any time in the future? ☐ Yes ☐ No

   If Yes, attach certification of fill compaction (item 3c. above) by the community's NFIP permit official, a registered professional Engineer, or an accredited soils engineer in accordance with Subparagraph 65.5(a)(6) of the NFIP regulations.

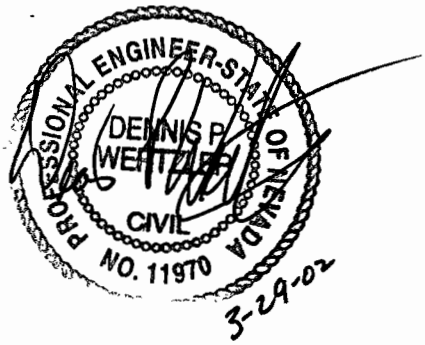
   Fill certification attached ☐ **Yes** ☐ **No**

4. Has fill been/will be placed in a V zone? ☐ Yes ☒ No

   If Yes, is the fill protected from erosion by a flood control structure such as a revetment or seawall?

   ☐ Yes ☐ No

   If Yes, attach the Coastal Structures Form (Form 10).



FEDERAL EMERGENCY MANAGEMENT AGENCY CHANNELIZATION	O.M.B. Burden No. 3067-0148 Expires April 30, 2001

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1.75 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; and to the Office of Management and Budget, Paperwork Reduction Project (3067-0148), Washington, DC 20503.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

Community Name: Clark County

Flooding Source: Duck Creek

Project Name/Identifier: Green Park Channel/Culvert System

1. REACH TO BE REVISED

Describe the limits of the revision **OR** submit a copy of the FIRM with the revision area clearly highlighted.
Copy of FIRM(s) attached depicting area of the revision (highlighted, or circled)? ☒ Yes

Downstream Limit: Las Vegas Blvd (North Box) Las Vegas Blvd (South Box)

Upstream Limit: Parvin Street (North Box) I-15 (South Box)

2. CHANNEL DESCRIPTION

Attach the following information about the channel (check box if information has been provided):

☒ Description of the inlet and outlet

☒ Description of the shape of the channel *(both cross sectional and planimetric configuration)* and its lining *(channel bottom and sides)*:

3. ACCESSORY STRUCTURES

The channelization includes:

☐ Levees *(Attach Levee/Floodwall System Analysis Form - Form 8)*
☒ Drop structures
☐ Superelevated sections
☒ Transitions in cross sectional geometry
☐ Debris basin/detention basin
☒ Energy dissipater
☐ Other (Describe):

4. DRAWING CHECKLIST

Attach the plans of the channelization certified by a registered professional engineer. The plan detail and information should include (check box if information has been provided):

☒ Channel alignment and locations of inlet, outlet, and accessory structures

☒ Channel lining

☒ Typical cross sections and profiles of channel banks and invert

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

5. HYDRAULIC CONSIDERATIONS

1. The channel was designed to carry 5080 (cfs) and/or the 100 -year flood. (North Box)
   1808 cfs 100-year
   2543 cfs 100-year (South Box)
2. The design elevation in the channel based on:

- [X] Subcritical flow
- [ ] Critical flow
- [X] Supercritical flow
- [ ] Energy grade line

3. **If there is the potential for a hydraulic jump at the following locations, check the box(es) that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.**

N/A

Inlet to channel?	☐ Yes
Outlet of channel?	☐ Yes
At Drop Structures?	☐ Yes
At Transitions?	☐ Yes
Other locations?	☐ Yes

Explanation Attached? ☒ **Yes** ☐ **No** ☐ **N/A**

6. SEDIMENT TRANSPORT CONSIDERATIONS

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the 100-year (base flood) water-surface elevations; and/or based on the stream geomorphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including sewer and deposition) to affect the base flood water-surface elevations, then provide the following information **(Check the box if provided):**

N/A

- ☐ Estimated sediment load
- ☐ Method used to estimate sediment transport
- ☐ Method used to estimate scour and/or deposition
- ☐ Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport

1.0 GENERAL LOCATION AND DEVELOPMENT DESCRIPTION

1.1 Scope

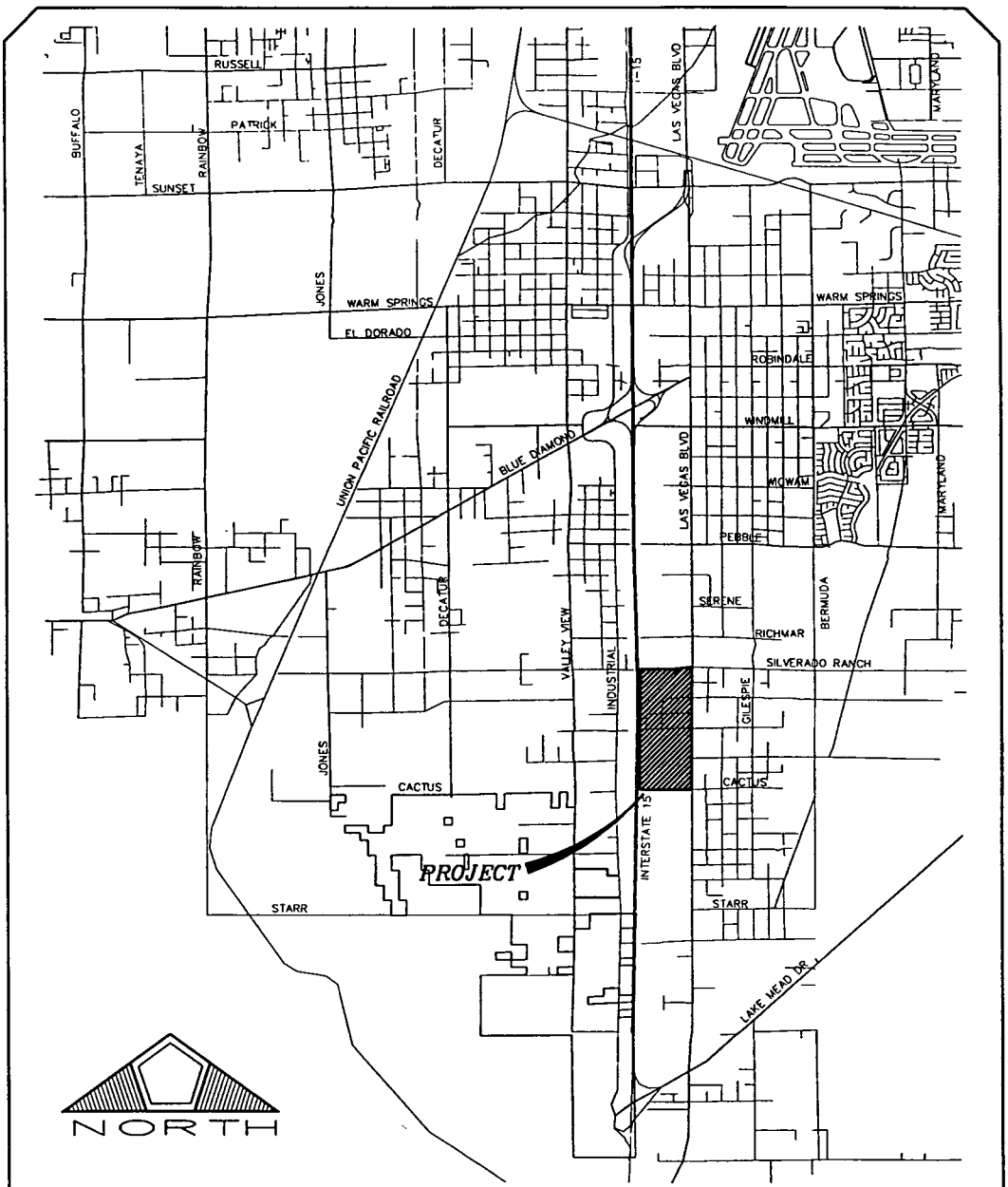
The purpose of this report is to provide detailed hydrologic and hydraulic analyses to support the design of several major storm drain facilities that will collect and convey the most significant offsite storm flows across the proposed site. This study will address the existing conditions that affect the proposed storm drain facilities onsite and offsite drainage. It is our intention that the construction of these facilities will allow the overall subject site to be removed from the FEMA designated flood zone. It is expected that this study will be submitted to FEMA with the F.I.S. restudy currently being prepared by the Clark County Regional Flood Control District (CCRFCD) to obtain a Conditional Letter of Map Revision (CLOMR) for our subject site. Upon construction of the proposed facilities a Letter of Map Revision (LOMR) will be obtained. The criteria set forth in the Clark County Regional Flood Control District "Hydrologic Criteria and Drainage Design Manual, " hereafter referred to as the "Drainage Criteria Manual," (Reference 6) has been used as the technical basis for this study. It is expected that the subject site will eventually be developed as a mixed-use commercial property. Additional technical drainage studies will be required to support the design of any onsite development and perimeter streets.

1.2 Location

The subject is located within Clark County, Nevada. The project site lies south of Silverado Ranch Parkway (Gomer Road), west of Las Vegas Boulevard, north of Cactus Avenue, and east of Interstate I-15 (See Figure 1, Vicinity Map). The proposed project is within a portion of Section 29, Township 22 South, Range 61 East, M.D.M., Clark County Nevada.

1.3 Description of Project

The overall project site consists of approximately 200 acres. The future land use of the subject site has not been determined beyond the general



VICINITY MAP

N.T.S.

PENTACORE

Civil Engineering * Construction Management
Land Surveying * Planning * ADA Consulting

VICINITY MAP

Greenpark Development
Greenpark

FIGURE 1

Job #: 0288.0040

designation of "mixed commercial". At this time, the proposed facilities are limited to the construction of extensive storm drain facilities consisting of multiple arch culverts (See Figure 2, *Master Drainage Facility Exhibit*). The site itself is typical and undeveloped desert, with the exception of a few scattered single-family homes. There are several natural washes throughout the site and existing bridges and culverts along the eastern and western property boundaries (I-15 to the west and Las Vegas Blvd to the east). The north portion of the site generally slopes to the east at approximately 1.3 %. The south portion of the site generally slopes to the northeast at approximately 1%.

The proposed storm drains will collect flow from the culvert crossings under I-15, and the flows that impact Cactus Road from the south (flow comes from under Lake Mead Boulevard). All the flows will be collected into the proposed storm drains and will be conveyed to Las Vegas Boulevard. The flows will be released on the east side of Las Vegas Boulevard in the approximate location of the historic flows. Historically, the offsite flows that impacted the site from the south and southwest have been routed to Las Vegas Boulevard where the flows pond up and weir over the top of Las Vegas Boulevard. Some flows would be conveyed under Las Vegas Boulevard via several small, undersized, existing box culverts.

A large portion of the overall site lies within FEMA designated flood zones. The flood zones have been analyzed in the past and water surface elevations have been determined. The limits of the established flood zone within the proposed site was based on an assumption in the original Duck Creek Hydrologic Unit F.I.S. Study (Ref 9) that a significant amount of flows weir over the top of I-15 from the west. However, the recently submitted FIS study by G.C. Wallace (Ref 8) has shown that a reduced flow overtops I-15. The majority of the flows impacting I-15 are forced north by the elevated freeway.

We have met the CCRFCD and it is our understanding that they are in the process of preparing a Duck Creek F.I.S. restudy that would incorporate

GRAPHIC SCALE

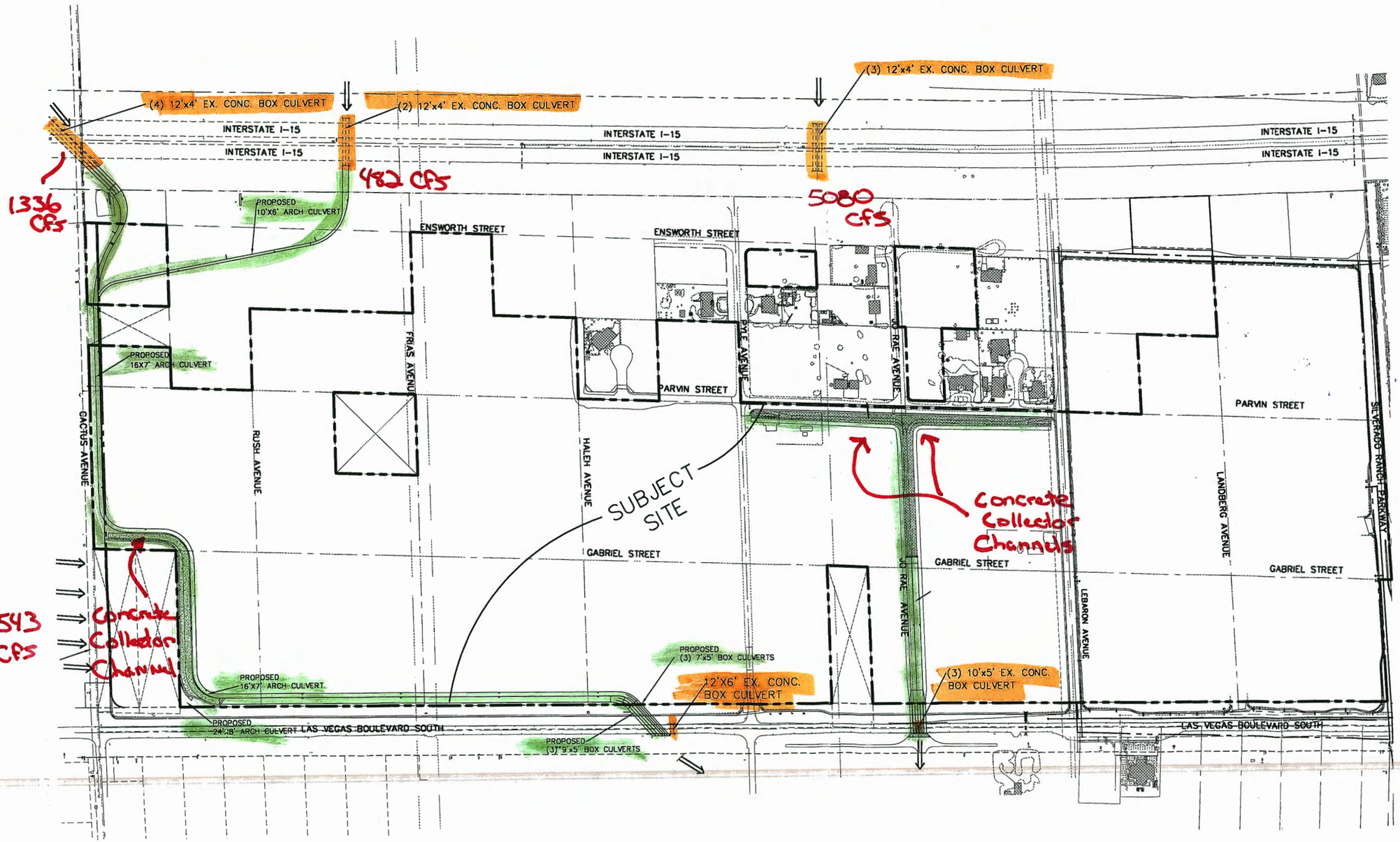
200 0 100 200 400 800

(IN FEET)
1 inch = 400 ft.

NORTH
SCALE: 1" = 400'

LEGEND

INDICATES PROPOSED FACILITY
INDICATES EXISTING FACILITY
INDICATES FLOW QUANTITY



ORIGINAL SHEET - ARCH D

Kurt S

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Consultants

Legend

Notes

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
GREEN PARK HOLDINGS, LLC

Las Vegas NV U.S.A.

Title
MASTER DRAINAGE FACILITY EXHIBIT

Project No.	Scale	
88100091	1"=400'	
Drawing No.	Sheet	Revision
	1 of 1	0

Figure 2

these latest findings. This F.I.S. restudy would redefine the flood zones across the subject site. It is anticipated that the new flood zones would show that the flows were contained within the proposed storm drain. Stantec has met with CCRFCD and G.C. Wallace, who is preparing the new Duck Creek F.I.S. study. The meeting was to discuss issues such as: what hydrologic data is available, which data presents the most accurate representation of the flows that impact the subject site, timing of the F.I.S. restudy, scope of the F.I.S. restudy, possible impacts of the F.I.S. restudy on the MPU, and discussion on how our proposed facilities would tie into the MPU facilities. It was mutually agreed that the offsite flows impacting the site have been well quantified by several previously approved studies.

The flow that impacts the site from the south was quantified in the Nimbus *"Pittman Wash F.I.S. Restudy"* (Ref 7). This information was incorporated in the hydrology used by G.C. Wallace for the Duck Creek FIS study. This hydrology has been accepted by Stantec for the purposes of determining all onsite hydraulics.

As a result of our meeting with CCRFCD, it has been determined that because of the timing of this study and the new Duck Creek F.I.S. study, our project could be included as an appendix to the F.I.S. submittal to FEMA later this year. This FEMA submittal will be the equivalent to a CLOMR (conditional letter of map revision). Once the Duck Creek F.I.S. study is approved and the storm drains built, we will submit for a LOMR (letter of map revision)

2.0 DRAINAGE BASIN DESCRIPTION

2.1 Offsite Drainage Description

The offsite drainage basins that contribute flows impacting the subject site are quite large and the flows are significant. The offsite basins that impact the subject site are from two distinct watersheds relative to the subject site, southern and southwestern (See Figure 3, *Watershed Map*).

Southern Watershed

The southern watershed is approximately 35 square miles. The majority of the flows are generated from basins located south of Lake Mead Boulevard (St. Rose Parkway). The delineation of the drainage basins, the hydrology, and the direction of the flows from the area south of Lake Mead Boulevard were studied extensively as part of the approved *Pittman Wash F.I.S* study (Ref 7). In our meetings with CCRFCD, during the research portion of preparing this study, the attendees (include Stantec Staff, CCRFCD staff and GC Wallace staff) agreed that the *Pittman Wash F.I.S.* study represented the best available information that describes the flows south of Lake Mead Boulevard. The hydrology used by G.C. Wallace incorporated this information. The most important aspect as it relates to our subject site, is the determination of the flow diversions south of Lake Mead Boulevard. A review of the hydrology shows that 2,534 cfs at Cactus Avenue during a 100 year storm event.

Southwestern Watershed

The southwestern watershed is approximately 85 square miles of land west of Interstate 15. This area includes the recently developed Southern Highlands master planned community.

This southwestern watershed area has been extensively studied as part of the recently submitted G.C. Wallace Duck Creek FIS study (Ref 8). This study not only quantified the flows from basins west of I-15 but also determined the diversion of the flows through existing drainage facilities under and over I-15 from Cactus Avenue to Blue Diamond interchange.

This study clearly shows that I-15 acts as a dike just west of the subject site. Attached is the exhibits (Figure 3A and 3B, *Duck Creek FIS Maps 6A and 6B*) that best shows the accepted flow diversions. There are three culverts that impact the site which are identified in the FIS study as I-151, I-152 and I-153. These culverts carry 1,336 cfs, 482 cfs, and 1,571 cfs (This flow when combined with the flow over I-15 is 5080 cfs) respectively.

In our meetings with CCRFCD during the research portion of preparing this study, the attendees (include Stantec staff, CCRFCD staff and GC Wallace staff) agreed that this study represented the best available information that describes the flows west of the subject site.

2.2 Onsite Drainage Description

The subject site is predominately undeveloped desert with several large washes that cut through the site generally from west and southwest to the east. The vegetation and terrain are typical of the local desert.

The subject site is the historical confluence point for large offsite flows from the south and west. The onsite drainage patterns for the northern portion of subject site is generally from the west to the east at a slope of approximately 1.3%. The onsite drainage patterns for the southern portion of the subject sire are generally from the south to the northeast at a slope of approximately 1%. The sire currently drains towards Las Vegas Boulevard, which appears to have been constructed well above the grade of the natural ground. The existing storm drain facilities under Las Vegas Boulevard are undersized causing the existing flows to pond up and weir over the roadway during major storm events.

2.3 FEMA Flood Hazard Zone

The Special Flood Hazard Areas for Clark County, Nevada are outlined in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps dated August 16, 1995. Upon reviewing Community Panel No. 32003 C 2568 D and No. 32003 C 2910 D (Figure 4, *FEMA Map*) it was determined that the subject site lies within the following zones:

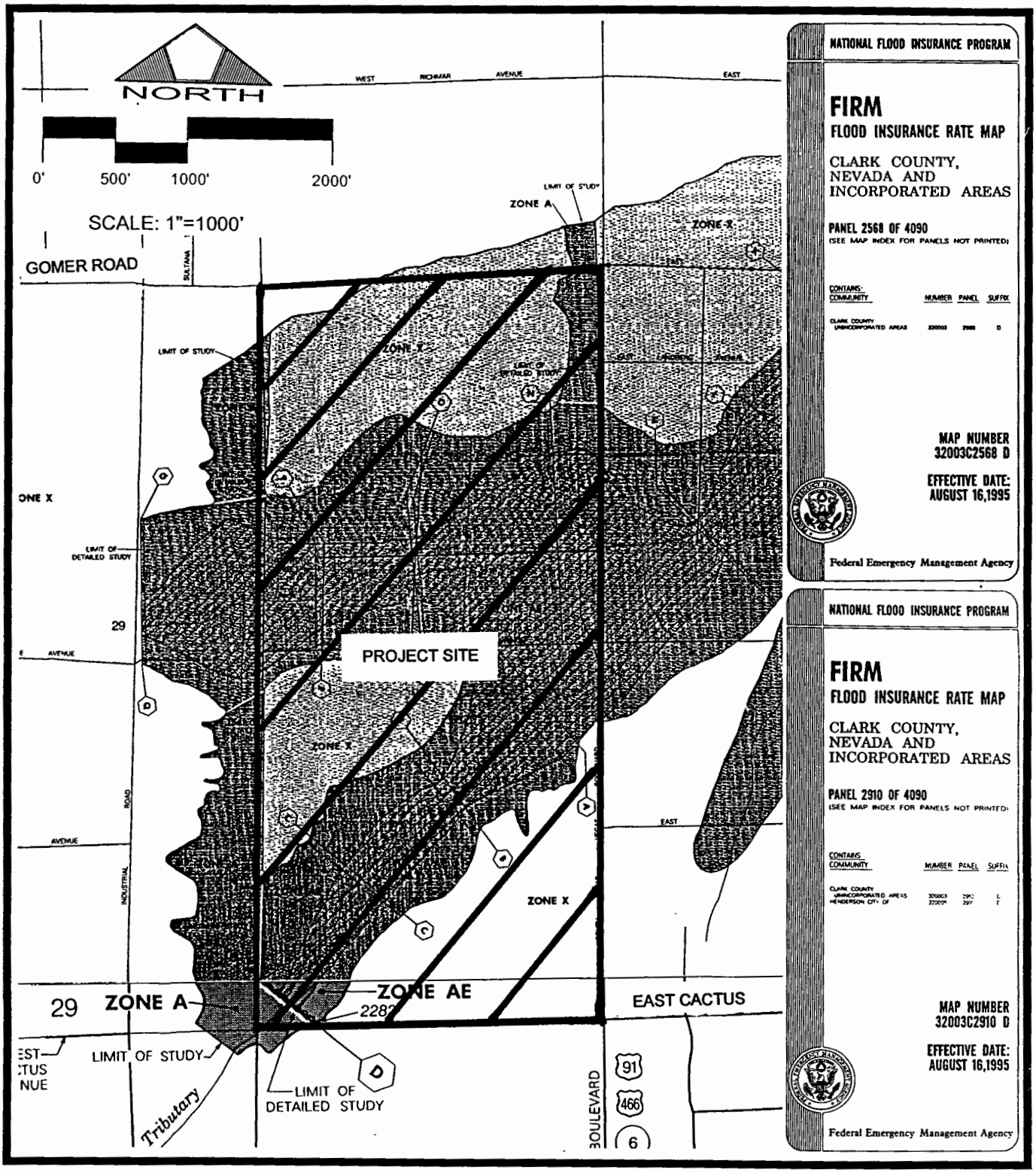
- Zone "A", and area determined to be inside the 100-year floodplain without available base flood elevation.
- Zone "AE" with Floodway, an area determined to be inside the 100-year floodplain where base flood elevations have been determined.
- Zone "X" with portions determined to be outside and inside of the 500-year floodplain.

It is expected that the limits of all the flood zones on the site will be substantially revised as a result of the pending F.I.S. restudy. The F.I.S. study will also include a CLOMR for the proposed storm drains contained within this study (See Figure 5, *Flood Zone Exhibit).*

2.4 Regional Flood Control Master Plan Update

Existing Facilities

There are existing local and proposed CCRFCD facilities that cross the subject site (See Figure 6A, Figure 6B, and Figure 7, *CCRFCD MPU Facilities*). The proposed site has three existing bridge spans on the western boundary that convey flows under Interstate I-15 identified as local facilities in the CCRFCD Master Plan. The most northerly is a 36-foot wide, 4-foot deep, three span bridge (CCRFCD local facility IS15 0233). The middle structure is a 24-foot wide, 4-foot deep two span bridge (CCRFCD local facility IS15 0199). The southern most structure is at Cactus Avenue and does not have a local identifier but consists of a 36-foot wide, 4-foot deep three span bridge. Several box culverts currently cross under Las Vegas Boulevard. The existing facilities under Las Vegas Boulevard are unaccounted for in the Master Plan Update.



PENTACORE
Civil Engineering • Construction Management
Land Surveying • Planning • ADA Consulting

FIRM MAP

Greenpark Development
Greenpark

Figure 4

Job #: 0288.0040

TABLE 2: SUMMARY OF DIVERSION OUTPUT

DIVERSION ID	FACILITY ID	FACILITY DESCRIPTION	DIVERSION Q100 (CFS)	DIVERSION DIRECTION	BYPASS Q100 (CFS)	BYPASS DIRECTION
DVBD2	BD2	2- 36" RCP	466	EAST	786	NORTH
DVBD3	BD3	7' x 4' RCB	290	EAST	1261	NORTH
DVBD4	BD4	2- 36" RCP	227	EAST	1022	NORTH
DVBD7	NA	NA	1260	NORTH	630	EAST
DVI151	I151	3- 12' x 4' RCB	1326	EAST	1301	NORTH
DVI152	I152	2- 12' x 4' RCB	482	EAST	816	NORTH
DVI153	I153	3- 12' x 4' RCB	5125	EAST	4385	NORTH
DVI154	I154	2- 12' x 4' RCB	1230	EAST	3516	NORTH
DVI155	I155	3- 12' x 5' RCB	2270	EAST	1421	NORTH
DVPITT	NA	NA	3160	EAST	3282	NORTH
DVROSE	NA	NA	644	NORTHEAST	2683	NORTH
TORAW	NA	NA	611	SOUTH	2605	EAST

TABLE 1: SUMMARY OF HEC-1 MODEL

Location	Area	SDN	DARF	Flow	Location	Area	SDN	DARF	Flow
B13A	1.29	3	0.950	933	D010	10.43	4	0.857	3620
B13B	0.54	3	0.975	223	D07	4.28	3	0.908	1804
PT1	1.83	3	0.950	1050	PT7	32.65	5	0.725	6413
B17	0.82	3	0.975	418	D012B	0.57	3	0.975	291
PT2	2.64	3	0.925	1252	PT8	33.21	5	0.725	6442
DVBD2	2.64	3	0.925	466	DVPITT	33.21	5	0.725	3160
DVBD2	2.64	3	0.925	786	DVPITT	33.21	5	0.725	3282
B13C	2.01	3	0.925	1432	DVROSE	33.21	5	0.725	644
PT3	4.65	3	0.908	1550	DVROSE	33.21	5	0.725	2638
DVBD3	4.65	3	0.908	290	D4A	1.87	3	0.950	1634
DVBD3	4.65	3	0.908	1261	PT25	117.75	5	0.580	6470
DVBD4	4.65	3	0.908	227	D4B	2.03	3	0.925	1804
DVBD4	4.65	3	0.908	1022	PT26	119.78	5	0.580	6470*
B11S	1.12	3	0.950	459	PT27	94.15	5	0.640	3499
HYDRO1	0.63	3	0.975	623	B16C	1.26	3	0.950	782
PT4	6.40	3	0.895	1961	PT28	132.53	5	0.580	9693
DVBD7	6.40	3	0.895	1260	LDCDB	132.53	5	0.580	7261
DVBD7	6.40	3	0.895	630	D5A	1.33	3	0.950	1261
B14B	0.99	3	0.975	440	PT29	133.86	5	0.580	7484
PT22W	7.39	3	0.885	764	B16B	0.70	3	0.975	614
D012A	10.21	4	0.857	2630	PT30	134.56	5	0.580	7484*
DVI151	10.21	4	0.857	1326	B16A	0.91	3	0.975	411
DVI151	10.21	4	0.857	1301	D5B	0.60	3	0.975	398
DVI152	10.21	4	0.857	482	PT31	136.07	5	0.580	7484
DVI152	10.21	4	0.857	816	PT32	143.12	5	0.580	8477
D01	9.54	4	0.865	3793	HYDRO2	0.38	3	0.990	36
D005	2.73	3	0.925	1464	B12	0.97	3	0.975	262
PT9	12.27	5	0.832	3580	PT33W	1.35	3	0.950	244
D02	5.91	3	0.903	2778	PT33	7.75	3	0.885	1286
D03	11.99	4	0.850	4758	B15A	0.96	3	0.975	509
D04	6.96	3	0.895	3193	PT34W	8.71	4	0.875	1290
PT10	18.94	5	0.804	5920	PT34	145.42	5	0.580	8551
D006	8.52	4	0.875	3509	MNWB	0.44	3	0.990	236
PT11	33.37	5	0.725	7588	MNWC	0.60	3	0.975	322
D2A	0.99	3	0.975	1028	PT35	1.04	3	0.950	529
PT12	46.63	5	0.695	9635	MNWD	0.08	3	0.990	72
D2B	7.50	3	0.885	2188	PT36	1.12	3	0.950	549
PT13	54.13	5	0.640	8471	MC2	0.92	3	0.975	367
D06	11.68	4	0.850	3819	PT37	2.03	3	0.925	845
D3	6.64	3	0.895	1518	B10A	1.60	3	0.950	1361
PT14	82.66	5	0.640	9510	PT38	3.64	3	0.915	1428
DVI153	82.66	5	0.640	5125	PT39	149.06	5	0.580	8562
DVI153	82.66	5	0.640	4385	D6	1.56	3	0.950	1098
D1A	2.29	3	0.925	1186	PT40	150.62	5	0.530	8562*
D1B	0.32	3	0.990	149	D7	0.85	3	0.975	399
PT15	2.61	3	0.925	1299	PT41	151.47	5	0.530	8562*
D1C	0.56	3	0.975	203	D8	1.26	3	0.950	1169
PT16	3.17	3	0.915	1420	PT42	152.73	5	0.530	8562*
D1D	1.23	3	0.950	764	B10B	0.85	3	0.975	476
D1E	0.22	3	0.990	81	D9A	0.86	3	0.975	227
D1F	0.81	3	0.975	162	PT43	1.71	3	0.950	646
PT17	5.43	3	0.903	1820	PT44	154.44	5	0.530	8562*
B18A	1.50	3	0.950	294	D9B	1.54	3	0.950	915
PT18	89.59	5	0.640	4746	PT45	155.99	5	0.530	8562*
DVI154	89.59	5	0.640	1230	D10	2.51	3	0.925	1683
DVI154	89.59	5	0.640	3516	PT46	158.49	5	0.530	8562*
B18B	1.92	3	0.950	1121	MC	2.80	3	0.925	3216
PT19	94.15	5	0.640	3690	TORAW	2.80	3	0.925	611
DVI155	94.15	5	0.640	2270	TORAW	2.80	3	0.925	2605
DVI155	94.15	5	0.640	1421	MCDB	2.80	3	0.925	82
B14A	1.35	3	0.950	1145	PT47	2.80	3	0.925	658
PT20	4.65	3	0.908	516	RH	1.36	3	0.950	551
PT21	97.51	5	0.640	1441	PT48W	4.16	3	0.908	1138
PT22	100.25	5	0.580	1441*	B20	0.79	3	0.975	395
B15B	0.95	3	0.975	356	PT48	163.44	5	0.530	8562*
PT23	101.20	5	0.580	1441*	D12	0.18	3	0.990	72
PT24	10.21	4	0.857	1805	D11A	0.16	3	0.990	131
D009	3.62	3	0.915	2594	PT49	0.33	3	0.990	133
D004	2.40	3	0.925	1565	PT50	163.78	5	0.530	8562*
PT5	6.02	3	0.895	3901	D11B	0.99	3	0.975	932
D08	11.91	4	0.850	3522	PT51	164.76	5	0.530	8562*
PT6	17.93	5	0.804	4564					

* ADOPTED FLOW, UPSTREAM FLOW CONTROLS
AREA IN SQUARE MILES / FLOW IN CFS

PT25A — 3973
PT25B — 6368

DUCK CREEK / BLUE DIAMOND WASHES FIS RESTUDY

Existing Condition Drainage Map

FIGURE 6B

LEGEND

D010	Basin Name
BD2	Bridge / Culvert ID
P13	HEC-1 Combination Point
DVBD2	Diversion / Inflow Hydrograph
MAIN	Street Name
●	HEC-1 Combination Point
■	Bridge / Culvert Location
	Inflow Hydrograph
	Flow Direction
	Wash / Channel Centerline
	Streets
	Contour Line
	Index Contour
	Detention Basin
	HEC-1 Drainage Basin Boundry

N W E S

0 2000 4000 Feet

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 South Rainbow Blvd., Las Vegas, NV 89146

Figure 3B

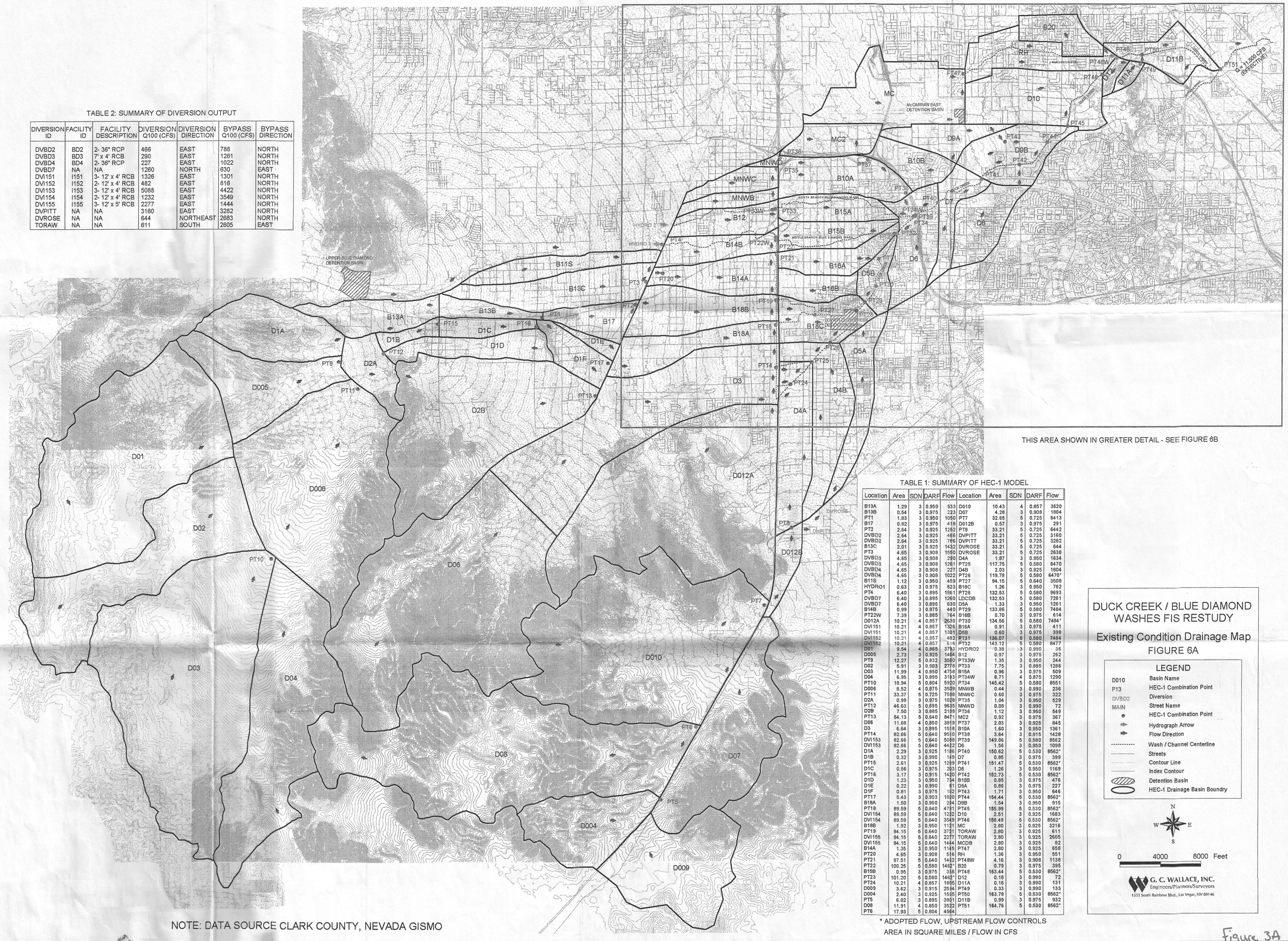
SEE FIGURE 6A

SEE FIGURE 6A

NOTE: DATA SOURCE CLARK COUNTY, NEVADA GISMO

TABLE 2: SUMMARY OF DIVERSION OUTPUT

DIVERSION ID	FACILITY ID	FACILITY DESCRIPTION	DIVERSION Q100 (CFS)	DIVERSION DIRECTION	BYPASS Q100 (CFS)	BYPASS DIRECTION
DVBD2	BD2	2- 36" RCP	466	EAST	786	NORTH
DVBD3	BD3	7' x 4' RCB	290	EAST	1261	NORTH
DVBD4	BD4	2- 36" RCP	227	EAST	1022	NORTH
DVBD7	NA	NA	1260	NORTH	630	EAST
DVI151	I151	3- 12' x 4' RCB	1326	EAST	1301	NORTH
DVI152	I152	2- 12' x 4' RCB	482	EAST	816	NORTH
DVI153	I153	3- 12' x 4' RCB	5088	EAST	4422	NORTH
DVI154	I154	2- 12' x 4' RCB	1232	EAST	3549	NORTH
DVI155	I155	3- 12' x 5' RCB	2277	EAST	1444	NORTH
DVPITT	NA	NA	3160	EAST	3282	NORTH
DVROSE	NA	NA	644	NORTHEAST	2683	NORTH
TORAW	NA	NA	611	SOUTH	2605	EAST



THIS AREA SHOWN IN GREATER DETAIL - SEE FIGURE 6B

NOTE: DATA SOURCE CLARK COUNTY, NEVADA GISMO

TABLE 1: SUMMARY OF HEC-1 MODEL

Location	Area	SDN	DARF	Flow	Location	Area	SDN	DARF	Flow
B13A	1.29	3	0.950	933	D010	10.43	4	0.857	3620
B13B	0.54	3	0.975	223	D07	4.26	3	0.908	1804
PT1	1.83	3	0.950	1050	PT7	32.65	5	0.725	6413
B17	0.82	3	0.975	418	D012B	0.57	3	0.975	291
PT2	2.64	3	0.925	1252	PT8	33.21	5	0.725	6442
DVBD2	2.64	3	0.925	466	DVPITT	33.21	5	0.725	3160
DVBD2	2.64	3	0.925	786	DVPITT	33.21	5	0.725	3282
B13C	2.01	3	0.925	1432	DVROSE	33.21	5	0.725	644
PT3	4.65	3	0.908	1550	DVROSE	33.21	5	0.725	2638
DVBD3	4.65	3	0.908	290	D4A	1.87	3	0.950	1634
DVBD3	4.65	3	0.908	1261	PT25	117.75	5	0.580	6470
DVBD4	4.65	3	0.908	227	D4B	2.03	3	0.925	1804
DVBD4	4.65	3	0.908	1022	PT26	119.78	5	0.580	6470*
B11S	1.12	3	0.950	459	PT27	94.15	5	0.640	3508
HYDRO1	0.63	3	0.975	623	B18C	1.26	3	0.950	782
PT4	6.40	3	0.895	1961	PT28	132.53	5	0.580	9693
DVBD7	6.40	3	0.895	1260	LDCDB	132.53	5	0.580	7261
DVBD7	6.40	3	0.895	630	D5A	1.33	3	0.950	1261
B14B	0.99	3	0.975	440	PT29	133.86	5	0.580	7484
PT22W	7.39	3	0.885	764	B16B	0.70	3	0.975	614
D012A	10.21	4	0.857	2630	PT30	134.56	5	0.580	7484*
DVI151	10.21	4	0.857	1326	B16A	0.91	3	0.975	411
DVI151	10.21	4	0.857	1301	D6B	0.60	3	0.975	398
DVI152	10.21	4	0.857	482	PT31	136.07	5	0.580	7484
DVI152	10.21	4	0.857	816	PT32	143.12	5	0.580	8477
D01	9.54	4	0.865	3793	HYDRO2	0.38	3	0.990	36
D005	2.73	3	0.925	1464	B12	0.97	3	0.975	262
PT9	12.27	5	0.832	3580	PT33W	1.35	3	0.950	244
D02	5.91	3	0.903	2778	PT33	7.75	3	0.885	1286
D03	11.99	4	0.850	4758	B15A	0.96	3	0.975	609
D04	6.95	3	0.895	3193	PT34W	8.71	4	0.875	1290
PT10	18.94	5	0.804	5920	PT34	145.42	5	0.580	8551
D006	8.52	4	0.875	3509	MNWB	0.44	3	0.990	236
PT11	33.37	5	0.725	7598	MNWC	0.60	3	0.975	322
D2A	0.99	3	0.975	1028	PT35	1.04	3	0.950	529
PT12	46.63	5	0.695	9635	MNWD	0.08	3	0.990	72
D2B	7.50	3	0.895	2188	PT36	1.12	3	0.950	549
PT13	54.13	5	0.640	8471	MC2	0.92	3	0.975	367
D06	11.68	4	0.850	3819	PT37	2.03	3	0.925	845
D3	6.64	3	0.895	1518	B10A	1.60	3	0.950	1361
PT14	82.66	5	0.640	9510	PT38	3.64	3	0.915	1428
DVI153	82.66	5	0.640	5088	PT39	149.06	5	0.580	8562
DVI153	82.66	5	0.640	4422	D6	1.56	3	0.950	1098
D1A	2.29	3	0.925	1186	PT40	150.62	5	0.530	8562*
D1B	0.32	3	0.990	149	D7	0.85	3	0.975	399
PT15	2.61	3	0.925	1299	PT41	151.47	5	0.530	8562*
D1C	0.56	3	0.975	283	D8	1.26	3	0.950	1169
PT16	3.17	3	0.915	1420	PT42	152.73	5	0.530	8562*
D1D	1.23	3	0.950	734	B10B	0.85	3	0.975	476
D1E	0.22	3	0.990	81	D9A	0.86	3	0.975	227
D1F	0.61	3	0.975	182	PT43	1.71	3	0.950	646
PT17	5.43	3	0.903	1820	PT44	154.44	5	0.530	8562*
B18A	1.50	3	0.950	294	D9B	1.54	3	0.950	915
PT18	89.59	5	0.640	4731	PT45	155.99	5	0.530	8562*
DVI154	89.59	5	0.640	1232	D10	2.51	3	0.925	1683
DVI154	89.59	5	0.640	3549	PT46	158.49	5	0.530	8562*
B18B	1.92	3	0.950	1121	MC	2.80	3	0.925	3216
PT19	94.15	5	0.640	3721	TORAW	2.80	3	0.925	611
DVI155	94.15	5	0.640	2277	TORAW	2.80	3	0.925	2605
DVI155	94.15	5	0.640	1444	MCDB	2.80	3	0.925	82
B14A	1.35	3	0.950	1145	PT47	2.80	3	0.925	658
PT20	4.65	3	0.908	516	RH	1.36	3	0.950	551
PT21	97.51	5	0.640	1452	PT48W	4.16	3	0.908	1138
PT22	100.25	5	0.580	1462*	B20	0.79	3	0.975	395
B15B	0.95	3	0.975	336	PT48	163.44	5	0.530	8562*
PT23	101.20	5	0.580	1462*	D12	0.18	3	0.990	72
PT24	10.21	4	0.857	1895	D11A	0.16	3	0.990	131
D009	3.62	3	0.915	2594	PT49	0.33	3	0.990	133
D004	2.40	3	0.925	1595	PT50	163.78	5	0.530	8562*
PT5	6.02	3	0.895	3991	D11B	0.99	3	0.975	932
D08	11.91	4	0.850	3522	PT51	164.76	5	0.530	8562*
PT6	17.93	5	0.804	4564					

* ADOPTED FLOW, UPSTREAM FLOW CONTROLS
AREA IN SQUARE MILES / FLOW IN CFS

DUCK CREEK / BLUE DIAMOND WASHES FIS RESTUDY

Existing Condition Drainage Map

FIGURE 6A

LEGEND

D010	Basin Name
P13	HEC-1 Combination Point
DVBD2	Diversion
MAIN	Street Name
	HEC-1 Combination Point
	Hydrograph Arrow
	Flow Direction
	Wash / Channel Centerline
	Streets
	Contour Line
	Index Contour
	Detention Basin
	HEC-1 Drainage Basin Boundry

N W E S

0 4000 8000 Feet

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1333 South Rainbow Blvd., Las Vegas, NV 89146

Figure 3A

Proposed Facilities Across The Subject Site

A proposed 15-foot wide, 4.5-foot depth, 2:1 side sloped Gabion Channel (CCRFCD facility BD01 0012) will convey flows, from (CCRFCD local facility IS15 0233), easterly across the site and exit through two proposed 6' x 5' Reinforced Concrete Box Culverts at Las Vegas Boulevard (CCRFCD facility BD01 0010).

Five additional 9' x 6' Reinforced Concrete Box Culverts are proposed to be added to the existing unidentified 3-12' x 4' Reinforced Box Culverts at Cactus and I-15 (CCRFCD facility DCWA 1429) to deliver flows originating west of Interstate I-15. This flow is then proposed to be carried by a 40-foot width, 7-foot depth, 2:1 side sloped Gabion Channel (CCRFCD) facility DCWA 1378) that transitions downstream to a depth of 7.5 foot depth (CCRFCD) facility DCWA 1362). This flow will exit through one existing 12' x 6' Reinforced Box Culvert and three proposed 12' x 6' Reinforced Concrete Box Culverts (CCRFCD facility DCWA 1358).

It is our intention that the proposed arch culvert storm drains will replace or supplement the proposed MPU facilities. CCRFCD facility BD01 0012 will be replaced by our north box facility. The north arch culvert is designed to convey 5,080 cfs. Currently, the proposed CCRFCD facility at this location is planned to convey only 500 cfs.

The south box facility is designed to convey a combined flow of 4,343 cfs. Currently the proposed CCRFCD facility at this location is planned to convey only 3,260 cfs. Our facility is more than adequately sized for the future condition of 3,260 cfs. A portion of the arch system will have to be extended west to I-15 in the future (by CCRFCD or others). Cactus Avenue right-of-way will be available for this extension. The flow being conveyed by these Master Plan facilities will eventually reach the existing Lower Duck Detention Basin. Once this study is approved, a CCRFCD Master Plan Update revision will be required to show the revised conveyance facilities and alignments. It should be noted that by constructing the proposed facilities, Greenpark would have provided an

important part of the master planned infrastructure at no cost to CCRFCD or the Public. The proposed development of this site is in compliance with the Clark County Regional Flood Control District Master Plan Update (Ref 5).

2.5 Previous Drainage Studies

The offsite drainage areas have been previously analyzed by the approved "*Pittman Wash F.I.S. Restudy" (Ref 7),* and the recently submitted FIS study "*Duck Creek / Blue Diamond Washes FIS Restudy*" by G.C. Wallace (Ref 8). The onsite area was analyzed in the approved "Duck Creek Hydrologic Unit F.I.S. Restudy" (Ref 9). Both studies have been reviewed and conceptually agreed with for this study.

3.0 PROPOSED DRAINAGE FACILITIES

3.1 General Description

The purpose of this study is to support the design of storm water conveyance facilities that are needed to mitigate the negative impact on the subject site caused by the significant flows from offsite basins. It is expected that these proposed facilities will provide the same function as the facilities identified in the MPU. This study is not intended to address any onsite development activity beyond the previously described storm water conveyance facilities, nor is it intended to support perimeter street improvements. Further technical studies will be needed to support those improvements.

North Box Drainage Improvements

The north box flows will be collected at Parvin Street. The natural topography is such that the existing flows will be centered at the intersection of Parvin Street and Jo Rae Avenue. This flow will be allowed to weir over the eastern curb into two parallel collector channels. Parvin street is the exact location of the G.C. Wallace FIS study cross section 26000. The weir places the flow at critical while the existing section is subcritical. This results in a reduction of the water surface elevation at this point.

FIS Section WSE = 2266.46 Greenpark Weir WSE = 2266.22

The flows that weir into each of the collection channels were calculated to be 2492 cfs in the south channel and 2588 cfs in the north channel. The collection channels merge together after both flows have been turned east. A wall separates the flows until the flows are going in the same direction. A review of the collection channels hydraulics shows that the channels HGL and EGL are contained within the channel and are lower than the

weir crest in Parvin Street. The hydraulics through the collector channels was modeled using HEC-RAS. This analysis was compared to two other methodologies to determine accuracy. The first was a weir calculation at the confluence. This calculation showed a weir height of 2263.70. Another check was performed using the spillway analysis as outlined in the Bureau of Reclamation's ***Design of Small Dams*** *(Ref 10).* The calculations contained within the book outline how to design a side channel spillway. The crux of the design procedure involves determining the depth at a control section (20-00) and calculating the losses as you move up the collection channel. We have included the calculations and a copy of the pertinent section from the ***Design of Small Dams***. The result of the calculations is a water surface that is approximately 1 foot higher then calculated by the HEC-RAS. The channel as designed will contain the higher water surface elevation with applicable freeboard. The water surface at the low point in Parvin Street is higher then the TC that was used as the weir crest. This will not effect the operation of the weir, as the channel flow depth is less then 2/3 of the crest height (per ***Design of Small Dams)***. These calculations are intended to be a back up to the HEC-RAS analysis. The numbers from the HEC-RAS analysis are still being used to set the HGL's in the collection system

The north box continues east toward Las Vegas Boulevard. Approximately 500 east of the confluence the flow will be collected in two arch-culverts. These arch culverts are then transitioned into a set of NDOT standard box culverts under Las Vegas Boulevard. The transition will end outside of the NDOT right-of-way and the flow will be released in the historical flow path (Please table in the appendix for all cross section comparisons).

South Box Drainage Improvements

The South Box Drainage Improvements generally applies to the proposed facilities that run west to east along Cactus Avenue and then turn north along the western edge of the Las Vegas Boulevard right of way. The South Box drainage improvements consist of two parallel drainage

systems that we will identify as "South Box A" and "South Box B" for discussion purposes within this study.

"South Box A" consists of proposed facilities that connect to two existing storm drain facilities under I-15 adjacent to the southern portion of the subject site. The southern most existing facility under I-15 consists of three 12' x 4' RCB's. The proposed improvements consists of extending the three 12' x 4' RCB's already in place under Interstate I-15. The existing boxes will be extended (approx. 170 ft) to the limits of the (NDOT) right-of-way. Once outside of the NDOT right-of-way the boxes will be transitioned, over a length of 160 ft, to a 16' x7' arch culvert. The alignment of the proposed facility will be curved to get the proposed facility within the future Cactus Avenue right of way.

This arch culvert will be joined by another arch culvert (10' x 6' arch culvert). This 10' x 6' arch culvert that connects into the 16' x 7' arch culvert will convey flows from the other existing drainage facility under I-15 that is located approximately 1000 linear feet north of Cactus Avenue. The existing facility consists of two 12' x 4' RCB already in place under Interstate I-15. The proposed improvements include extending the existing boxes (approx. 107 ft) to the limits of the NDOT right-of-way. Once outside of the NDOT right-of-way the boxes will be transitioned, over a length of 112 t, to a 10' x 6' arch culvert. This 10' x 6' arch culvert will join the 16' x 7' arch culvert with an entrance angle of less than 12 degrees. South box A will follow along Cactus Avenue and will curve north along side of Las Vegas Boulevard crossing. At Las Vegas Boulevard the 16' x 7' arch culvert will be transitioned into three 7' x 5' RCB. The transition will end outside of the NDOT right-of-way. The three 7' x 5' RCB will cross under Las Vegas Boulevard and the flow will be released in the historical flow path. Grouted rip-rap and cut-off walls have been placed at the outlet (See appendix for rip-rap sizing).

South Box B consists of a 24' x 8' arch culvert. The flow that enters this culvert will be from the Cactus Avenue Collector. A large, natural swale to the south is the obvious path of the offsite flows. This existing swale can be seen on aerial photographs (See Figure 11, Aerial Photo) and on

field visits. The natural swale fans out and becomes less defined as it approaches Cactus Avenue. Besides viewing aerials and performing field visits, we prepared a normal depth calculation that showed that flow will be contained in the swale and will impact the proposed collection facility. The Cactus Avenue Collector will collect the 2,543-cfs that impacts Cactus Avenue from the south. The flows from the south will flow in its existing condition across an out parcel at the intersection of Cactus Avenue and Las Vegas Boulevard and into the concrete lined collection channel. The channel will route the flow east into a 24' x 8' arch culvert. South box B continues north until it reaches an existing Las Vegas Boulevard crossing. At Las Vegas Boulevard the 24' x 8' arch culvert will be transitioned into three 10' x 5' RCB. The transition will end outside of the NDOT right-of-way. The three 10' x 5' RCB will cross under Las Vegas Boulevard and the flow will be released in the historical flow path (Please table in the appendix for all cross section comparisons).

3.2 Compliance with Regulations and Adopted Plans

The proposed storm facilities will alter two adopted plans. These plans include the CCRFCD Las Vegas Master Plan Update and the FEMA flood plain map as proposed in accompanying FIS study.

The changes to the Las Vegas Master Plan consist of building the majority of the proposed future facilities that cross the site. The facilities will be a different design than was previously anticipated and along a slightly different alignment. It should be noted that by constructing the proposed facilities, Greenpark would have provided an important part of the master planned infrastructure at no cost to CCRFCD or the public. The proposed development of this site is in compliance with the Clark County Regional Flood Control District Master Plan Update (Ref 5).

The FEMA floodplain will be remapped as a part of the CCRFCD Duck Creek FIS restudy. Once the CLOMR is approved our client will construct the facilities and apply for a LOMR. It is anticipated that the LOMR will change the flood zone designation across the entire site to a zone "x" with

a designation, which shows the flows contained within the storm drain facilities.

3.3 Facility Design Calculations

A WSPGW analysis has been performed for all underground storm drains within the site and all open channel analysis has been performed using HEC-RAS. Each of the models input and output data can be found in the appendix. The "North Box", which carries 5080 cfs, delivers flow from I-Parvin Street to Las Vegas Blvd. The north box system consists of a HEC-RAS analysis for the collector channel and open channel, WSPGW for the portion of the system that is underground, and HEC-RAS for the outlet of the system and the tie in to the FIS study.

The run for "South Box A", also delivers flow from I-15 to Las Vegas Blvd., but across the southern portion of the site. This system carries an initial flow of 1336 cfs, and collects 482 cfs from the "South Box A Lateral". This combined flow of 1808 cfs is contained through the system to the outlet. The "South Box B" system (24' x 8' arch) is structurally connected (no flow exchange between systems) to "South Box A", which leads to a common outlet for the two systems.

The run for "South Box A Lateral" conveys 482 cfs. The outlet water surface elevation for the South Box A Lateral was determined from the "South Box A" results.

The "South Box B" analysis conveys flows impacting the site from the south. The flow is completely contained inside the structure after all of the flow is introduced. The outlet water surface was determined by using the HEC-RAS and iterating to a WSE that was consistent with both analyses.

4.0 CONCLUSIONS AND RECOMMENDATIONS

1. The major offsite flows impacting the project site can be safely conveyed around and through the subject site via the proposed storm drain facilities and open channels. The proposed storm drains will collect flow from the culvert crossings under I-15, and the flows that impact Cactus Road from the south (flow comes from under Lake Mead Boulevard). All the flows will be collected into the proposed arch culverts and be conveyed to Las Vegas Boulevard. The flows will be released on the east side of Las Vegas Boulevard in the approximate location of the historic flows.

2. Hydrology was based on the HEC-1 computer model as determined in the G.C. Wallace FIS study (Volume 1) and on generally accepted engineering practices in accordance with the Drainage Criteria Manual.

3. A considerable portion of the site is located within a Special Flood Hazard Zone. It is expected that the limits of all the flood zones on the site will be substantially revised as a result of the pending F.I.S. restudy. The F.I.S. study will also include a CLOMR for the proposed arch-culverts contained within the study.

4. The development of this site is in compliance with the Clark County Regional Flood Control District Flood Control Master Plan Update.

5. Additional technical drainage studies will be required to support the design of any onsite development and perimeter streets. Also numerous easements and dedications will have to be obtained prior to approval of these improvement plans.

6. Historically, the flows through the site have been collected at Las Vegas Boulevard. Due to elevated nature of Las Vegas Boulevard the flow would have had to pond up to considerable depth before weiring over. The proposed storm drain alleviated this condition by conveying all of the considerable offsite flows under Las Vegas Boulevard and releasing them back to the historical flow path.

5.0 REFERENCES

1. Department of Public Works, Clark County, Nevada, "Improvement Standards," 1993

2. U.S. Department of Agriculture, Soils Conservation Services, Technical Release 55, "Urban Hydrology for Small Watersheds," Washington, D.C. January 1975,

3. U.S. Department of Agriculture, Soils Conservation Services, "Soil Survey of Las Vegas Valley Area," July 1985

4. U.S. Army Corps of Engineers, "HEC-1 Flood Hydrograph Package," September 1981, Revised January 1985

5. PBS&J and VTN Nevada, Flood Control Master Plan Update of The Las Vegas Valley," February 1997.

6. Clark County Regional Food Control District, "Hydrologic Criteria and Drainage Design Manual," October 1990

7. Nimbus, "Pittman Was Flood Insurance Study Restudy," June 1995

8. G.C. Wallace "Duck Creek / Blue Diamond Washes FIS Restudy" March 2002

9. Michael Baker Jr., Inc., "Duck Creek Hydrologic Unit," August 1992

10. Bureau of Reclamation, "Design of Small Dams," 1987

11. CivilDesign, Inc., "User's Manual – Program Package WSPGW," 1994

12. U.S. Department of Commerce, "Design of Riprap Revetment," March 1989

HEC1 S/N: 1333000362 HMVersion: 6.40 Data File: duck5.txt

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*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*            SEPTEMBER 1990          *
*             VERSION 4.0            *
*                                    *
*  RUN DATE  03/21/2002  TIME  09:09:37 *
*                                    *
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*                          *
*    U.S. ARMY CORPS OF ENGI
*    HYDROLOGIC ENGINEERING
*          609 SECOND STREET
*       DAVIS, CALIFORNIA 95
*           (916) 756-1104
*                          *
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:::                                      :::
:::  Full Microcomputer Implementation  :::
:::                 by                   :::
:::         Haestad Methods, Inc.        :::
:::                                      :::
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37 Brookside Road * Waterbury, Connecticut 06708 * (203) 755-1666

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUC
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSIO
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
          *DIAGRAM
*** FREE ***
    1     ID   DUCK CREEK/BLUE DIAMOND WASHES FIS RESTUDY
    2     ID   "G.C. WALLACE, INC. BY MJL"
    3     ID   DUCK5.XLS
    4     ID   "MODEL BASED FROM HEC-1 FILE, BDE100UN, FROM 1991 LAS VEGAS VALLEY FIS"
    5     ID   "BY JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC."
    6     ID   UPDATED PRECIPITATION VALUES
    7     ID   % IMPERVIOUS ADDED TO LS CARD FOR DEVELOPMENT SINCE 1990
    8     ID   ADDITIONAL DIVERSIONS ADDED
    9     ID   DESIGN STORM = 100-YEAR 6-HOUR STORM
   10     ID   STORM DISTRIBUTION = SDN5
          *
   11     ID     JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
   12     ID
   13     ID     AREA (SQUARE MILES)    DARF
   14     ID    12 - 16    0.832
   15     ID    16 - 20    0.804
   16     ID    20 - 30    0.765
   17     ID    30 - 40    0.725
   18     ID    40 - 50    0.695
   19     ID    50 -100    0.640
   20     ID    100 - 150    0.580
   21     ID    150 - 200    0.530
   22     ID
   23     IT       5       0       0     120
   24     IO       5       0       0
   25     JR    PREC   0.832   0.804   0.765   0.725   0.695   0.640   0.580    0.53
          *

   26     KK    B13A
   27     BA   1.290
   28     PB    3.14
   29     PC   0.000   0.020   0.059   0.080   0.110   0.144   0.150   0.160   0.168   0.171
   30     PC   0.180   0.182   0.187   0.190   0.197   0.202   0.210   0.220   0.230   0.241
   31     PC   0.250   0.259   0.265   0.280   0.290   0.300   0.305   0.309   0.310   0.317
   32     PC   0.321   0.327   0.333   0.346   0.361   0.381   0.408   0.430   0.477   0.514
   33     PC   0.561   0.630   0.710   0.720   0.731   0.752   0.779   0.790   0.795   0.804
   34     PC   0.810   0.820   0.826   0.840   0.859   0.889   0.910   0.938   0.966   0.970
   35     PC   0.974   0.979   0.981   0.983   0.985   0.989   0.990   0.992   0.993   0.996
   36     PC   0.997   0.999   1.000
   37     LS       0    88.0
   38     UD   0.680
          *

   39     KK   RB13A
   40     KM   ROUTE B13A TO PT1
   41     RM       7    0.64     0.1
          *
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  42      KK    B13B
  43      BA   0.538
  44      PB    2.96
  45      LS       0    88.0
  46      UD   1.440
          *

  47      KK     PT1
  48      KM   COMBINE BASINS B13A AND B13B
  49      HC       2
          *

  50      KK    RPT1
  51      KM   ROUTE PT1 TO PT2
  52      RM       3    0.28    0.15
          *

  53      KK     B17
  54      BA   0.816
  55      PB    2.80
  56      LS       0    88.0
  57      UD   0.940
          *

  58      KK     PT2
  59      KM   COMBINE PT1 AND BASIN B17
  60      HC       2
          *

  61      KK   DVBD2
  62      KM   "DIVERSION EAST THRU 2-36"" RCP'S AT UPRR LOCATED 300 FT SOUTH OF BLUE DIAMON
  63      DT   DVBD2
  64      DI       0     121     500    1000    1500    2000
  65      DQ       0     121     240     391     540     690
          *

  66      KK    RPT2
  67      KM   ROUTE BYPASS TO PT3
  68      RD    2000   0.008    0.03       0    TRAP      35       3
          *

  69      KK    B13C
  70      BA   2.005
  71      PB    2.82
  72      LS       0    88.1
  73      UD   0.510
          *

  74      KK     PT3
  75      KM   COMBINE BYPASS FROM DVBD2 AND BASIN B13C
  76      HC       2
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  77      KK   DVBD3
  78      KM   DIVERSION EAST THRU 8'x4' RCB AT UPRR LOCATED 1700 FT NORTH OF BLUE DIAMOND
  79      DT   DVBD3
  80      DI       0     238     500    1000    1500    2000
  81      DQ       0     238     252     271     288     304
          *

  82      KK   RPT3A
  83      KM   ROUTE BYPASS FROM DVBD3 NORTH ALONG WEST SIDE OF UPRR TO UPPR CULVERT BD4
  84      KM   MUSKINGUM ROUTING UNSTABLE
  85      RD    1200   0.008    0.03       0    TRAP      35       3
          *

  86      KK   DVBD4
  87      KM   "DIVERSION EAST THRU 2-36"" RCP'S AT UPRR LOCATED 3000 FT NORTH OF BLUE DIAMO
  88      DT   DVBD4
  89      DI       0      97     500    1000    1500    2000
  90      DQ       0      97     149     202     252     296
          *

  91      KK   RPT3B
  92      KM   ROUTE BYPASS FROM DVBD4 NORTH ALONG WEST SIDE OF UPRR TO UPPR BRIDGE
  93      RM       1   0.119    0.15
          *

  94      KK    B11S
  95      KM   SOUTHERN PORTION OF BASIN B11 TIES INTO HYDRO1 BOUNDARY AREA
  96      BA   1.121
  97      PB    2.82
  98      LS       0    78.0
  99      UD   0.580
          *

 100      KK  HYDRO1
 101      KM   INFLOW HYDROGRAPH
 102      KM   "REFERENCED FROM ""LOMR FOR AREA DOWNSTREAM OF UPPER BLUE DIAMOND D.B."""
 103      KM   "SEE COMBINATION POINT C-5, DARF RATIO 0.98, OF HEC-1 FROM REFERENCED LOMR"
 104      BA   0.630
 105      QI       0       0       0       0       0       0       0       0       0       0
 106      QI       0       0       0       0       0       0       0       0       0       0
 107      QI       0       0       1       7      14      29      45      58      69      76
 108      QI      82      86      90      94      99     100     101     100     100     100
 109      QI     102     109     126     161     223     318     430     538     604     623
 110      QI     607     569     525     480     437     397     363     335     316     306
 111      QI     304     310     321     333     339     332     314     289     264     239
 112      QI     217     198     182     169     159     150     143     137     131     127
 113      QI     122     118     114     110     107     104     102     101     100      99
 114      QI      98      98      97      97      97      97      97      96      96      96
 115      QI      96      96      96      97      96      96      96      96      96      96
 116      QI      96      96      96      96      96      96      96      96      96      96
 117      QI      96      96      96      96      96      96      96      96      96      96
 118      QI      96      96      96      96      96      96      96      96      96      96
 119      QI      96      96      96      96      96      96      96      96      96      96
 120      QI      96      96      96      96      96      95      95      95      95      95
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
 121          QI      95      95      95      95      95      95      95      95      95      95
 122          QI      95      95      95      95      95      95      95      95      95      95
 123          QI      95      95      95      95      95      95      95      95      95      95
 124          QI      95      95      95      95      95      95      95      95      95      95
 125          QI      95      95      95      95      95      95      95      95      95      95
 126          QI      95      95      95      95      95      95      95      95      95      95
 127          QI      95      95      95      95      95      95      95      95      95      95
 128          QI      95      95      94      94      94      94      94      94      94      94
 129          QI      94      94      94      94      94      94      94      94      94      94
 130          QI      94      94      94      94      94      94      94      94      94      94
 131          QI      94      94      94      94      94      94      94      94      94      94
 132          QI      94      94      94      94      94      94      94      94      94      94
 133          QI      94      94      94      94      94      94      94      94      94      94
 134          QI      94      94      94      94      94      94      94      94      94      94
              *

 135          KK     PT4
 136          KM   "COMBINE BASIN B11S, HYDRO2, AND BYPASS FROM DVBD4"
 137          KM   SEE COMBINATION POINT C-5 OF HEC-1 FROM REFERENCED LOMR
 138          KM   "PT C-5 REFERENCED FROM ""LOMR FOR AREA DOWNSTREAM OF UPPER BLUE DIAMOND D.B.
 139          HC       3
              *

 140          KK   RPT4A
 141          KM   ROUTE PT4 TO DIVERSION DVBD7
 142          RM       3    0.22    0.15
              *

 143          KK   DVBD7
 144          KM   DIVERSION NORTH TO NORTH BRANCH BLUE DIAMOND WASH
 145          KM   DIVERSION LOCATED NEAR INTERSECTION OF HINSON AND WINDMILL
 146          KM   "REFERENCED FROM BLUE DIAMOND/I-15 INTERCHANGE REPORT, BY PBS&J, JAN 2001"
 147          DT   DVBD7
 148          DI       0    1200    1500    1800    2100    2400    2700    3000
 149          DQ       0     800    1000    1200    1400    1600    1800    2000
              *

 150          KK   RPT4B
 151          KM   ROUTE BYPASS TO PT22W
 152          RM       1    0.11    0.15
              *

 153          KK    B14B
 154          BA   0.992
 155          PB    2.77
 156          LS       0    73.4     9.0
 157          UD    0.42
              *

 158          KK   PT22W
 159          KM   COMBINE PT4 AND BASIN B14B
 160          HC       2
              *
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  161     KK   D012A
  162     BA  10.211
  163     PB    2.95
  164     LS       0    83.0
  165     UD   1.320
          *

  166     KK  RD012A
  167     KM   ROUTE BASIN D012A TO I15 CULVERT 3 - 12'x4' RCB'S (DCWA 1429)
  168     KM   MUSKINGUM ROUTING UNSTABLE
  169     RD     750   0.007   0.030       0    TRAP      65      10
          *

  170     KK  DVI151
  171     KM   DIVERSION EAST THRU I15 CULVERT 3 - 12'x4' RCB'S (DCWA 1429)
  172     DT  DVI151
  173     DI       0     993    1305    1778    2400    3146
  174     DQ       0     992    1100    1200    1298    1389
          *

  175     KK   RI151
  176     KM   ROUTE BYPASS FROM 3 - 12'x4' RCB'S TO I15 BRIDGE 24'x4' (IS15 0199)
  177     RM       1   0.071   0.150
          *

  178     KK  DVI152
  179     KM   DIVERSION EAST THRU I15 BRIDGE 24'x4' (IS15 0199)
  180     DT  DVI152
  181     DI       0     128     466     929    1506    2268    3133    3815
  182     DQ       0      47     190     362     550     733     896    1040
          *

  183     KK   RI152
  184     KM   ROUTE BYPASS FROM I15 BRIDGE 24'x4' TO I15 BRIDGE 36'x4' (IS15 0233)
  185     RM       1   0.123   0.150
          *

  186     KK     D01
  187     BA   9.536
  188     PB    3.42
  189     LS       0    83.0
  190     UD   1.000
          *

  191     KK    RD01
  192     KM   ROUTE BASIN D01 TO PT9
  193     RM       3    0.64   0.150
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  194     KK    D005
  195     BA   2.732
  196     PB    3.27
  197     LS       0    82.0
  198     UD   0.750
          *

  199     KK     PT9
  200     KM   COMBINE BASINS D01 AND D005
  201     HC       2
          *

  202     KK   RD005
  203     KM   ROUTE BASIN D005 TO PT12
  204     RM       1     0.2   0.150
          *

  205     KK     D02
  206     BA   5.915
  207     PB    3.44
  208     LS       0    83.0
  209     UD   1.030
          *

  210     KK    RD02
  211     KM   ROUTE BASIN D02 TO PT11
  212     RM       3    0.62   0.150
          *

  213     KK     D03
  214     BA  11.991
  215     PB    3.42
  216     LS       0    83.0
  217     UD   0.960
          *

  218     KK     D04
  219     BA   6.950
  220     PB    3.37
  221     LS       0    84.0
  222     UD   1.060
          *

  223     KK    PT10
  224     KM   COMBINE BASINS D03 AND D04
  225     HC       2
          *

  226     KK   RPT10
  227     KM   ROUTE PT10 TO PT11
  228     RM       3    0.82   0.150
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 229      KK    D006
 230      BA   8.518
 231      PB    3.24
 232      LS       0    83.0
 233      UD   0.850
          *

 234      KK    PT11
 235      KM   "COMBINE PT10, BASINS D002 AND D006"
 236      HC       3
          *

 237      KK   RPT11
 238      KM   ROUTE PT11 TO PT12
 239      RM       1    0.18   0.150
          *

 240      KK     D2A
 241      BA   0.988
 242      PB    3.16
 243      LS       0    84.0
 244      UD   0.280
          *

 245      KK    PT12
 246      KM   "COMBINE PT9, PT11 AND BASIN D2A"
 247      HC       3
          *

 248      KK   RPT12
 249      KM   ROUTE PT12 TO PT13
 250      RM       3    0.83   0.150
          *

 251      KK     D2B
 252      BA   7.503
 253      PB    3.06
 254      LS       0    80.1
 255      UD   1.180
          *

 256      KK    PT13
 257      KM   COMBINE PT12 AND BASIN D2B
 258      HC       2
          *

 259      KK   RPT13
 260      KM   ROUTE PT13 TO PT14
 261      RM       4     0.9   0.100
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  262     KK     D06
  263     BA  11.677
  264     PB    3.21
  265     LS       0    84.0
  266     UD   1.190
          *

  267     KK    RD06
  268     KM   ROUTE BASIN D06 TO PT14
  269     RM       3    0.78   0.150
          *

  270     KK      D3
  271     BA   6.637
  272     PB    2.90
  273     LS       0    77.0
  274     UD   1.130
          *

  275     KK    PT14
  276     KM   "COMBINE BASINS D3, D06, PT13, AND BYPASS FROM I-15 CULVERT, I152 (IS15 0199)
  277     HC       4
          *

  278     KK  DVI153
  279     KM   DIVERSION EAST THRU I15 BRIDGE 36'x4' (IS15 0233)
  280     DT  DVI153
  281     DI    1910    3220    6620    8040    8770    9390   10030   10740
  282     DQ    1190    1450    3280    4130    4550    5000    5470    5990
          *

  283     KK   RPT14
  284     KM   ROUTE BYPASS FROM I15 BRIDGE 36'x4' TO I15 BRIDGE 24'x4' (IS15 0315)
  285     RM       6   0.484   0.150
          *

  286     KK     D1A
  287     BA   2.290
  288     PB    3.25
  289     LS       0    83.0
  290     UD   0.830
          *

  291     KK    RD1A
  292     KM   ROUTE BASIN D1A TO PT15
  293     RM       2    0.17   0.150
          *

  294     KK     D1B
  295     BA   0.316
  296     PB    3.10
  297     LS       0    84.0
  298     UD   1.060
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  299     KK    PT15
  300     KM   COMBINE BASINS D1A AND D1B
  301     HC       2
          *

  302     KK   RPT15
  303     KM   ROUTE PT15 TO PT16
  304     RM       4    0.33   0.150
          *

  305     KK     D1C
  306     BA   0.565
  307     PB    2.97
  308     LS       0    83.0
  309     UD   1.290
          *

  310     KK    PT16
  311     KM   COMBINE PT15 AND BASIN D1C
  312     HC       2
          *

  313     KK   RPT16
  314     KM   ROUTE PT16 TO PT17
  315     RM       3    0.26   0.150
          *

  316     KK     D1D
  317     BA   1.231
  318     PB    2.99
  319     LS       0    82.0
  320     UD   0.500
          *

  321     KK    RD1D
  322     KM   ROUTE BASIN D1D TO PT17
  323     RM       2    0.16   0.150
          *

  324     KK     D1E
  325     BA   0.224
  326     PB    2.83
  327     LS       0    81.5
  328     UD   1.060
          *

  329     KK     D1F
  330     BA   0.805
  331     PB    2.86
  332     LS       0    75.2
  333     UD   1.500
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 334      KK    PT17
 335      KM   "COMBINE PT16, BASINS D1D, D1E, AND D1F"
 336      HC       4
          *

 337      KK   RPT17
 338      KM   ROUTE PT17 TO PT18
 339      RM       6     0.5   0.100
          *

 340      KK    B18A
 341      BA   1.503
 342      PB    2.79
 343      LS       0    69.4     1.0
 344      UD   0.700
          *

 345      KK    PT18
 346      KM   "COMBINE PT17, BASIN B18A, AND BYPASS FROM PT14 (IS15 0233)"
 347      HC       3
          *

 348      KK  DVI154
 349      KM   DIVERSION EAST THRU I15 BRIDGE 24'x4' (IS15 0315)
 350      DT  DVI154
 351      DI       0    2318    4128    5274    6452    7636    8617    9479
 352      DQ       0    1040    1205    1252    1297    1341    1373    1404
          *

 353      KK   RPT18
 354      KM   ROUTE BYPASS FROM I15 BRIDGE 24'x4' TO I15 BRIDGE 36'x5' (IS15 0359)
 355      RM       1   0.113   0.150
          *

 356      KK    B18B
 357      BA   1.916
 358      PB    2.77
 359      LS       0    86.4
 360      UD   0.640
          *

 361      KK   DVBD2
 362      KM   RETURN FLOW PASSING THRU UPPR CULVERT AT PT2 (UPRR 0471)
 363      DR   DVBD2
          *

 364      KK  RDVBD2
 365      KM   ROUTE DVBD2 TO PT19
 366      RM       6    0.52   0.100
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 367      KK    PT19
 368      KM   "COMBINE BASIN B18B, DVBD2, AND BYPASS FROM PT18"
 369      HC       3
          *

 370      KK  DVI155
 371      KM   DIVERSION EAST THRU I15 BRIDGE 36'x5' (IS15 0359)
 372      DT  DVI155
 373      DI       0    2716    3378    4083    4548    4960    5791    6843
 374      DQ       0    1980    2192    2367    2531    2651    3141    3890
          *

 375      KK   RPT19
 376      KM   ROUTE BYPASS AT PT19 TO PT21
 377      RM       8   0.641   0.150
          *

 378      KK    B14A
 379      BA   1.351
 380      PB    2.77
 381      LS       0    88.0     5.0
 382      UD   0.400
          *

 383      KK  RDVBD3
 384      KM   "RETURN FLOW PASSING THRU UPPR CULVERT AT PT3, BD3 (UPRR 0511)"
 385      DR   DVBD3
          *

 386      KK  RDVBD4
 387      KM   "RETURN FLOW PASSING THRU UPPR CULVERT, BD4 (UPRR 0534)"
 388      DR   DVBD4
          *

 389      KK    PT20
 390      KM   COMBINE DVBD3 AND DVBD4
 391      HC       2
          *

 392      KK  RDVBD4
 393      KM   ROUTE PT20 TO PT21
 394      RM       6    0.51   0.100
          *

 395      KK    PT21
 396      KM   "COMBINE PT20, BASIN B14A, AND BYPASS FROM PT19"
 397      HC       3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  398     KK    PT22
  399     KM   COMBINE PT21 AND PT22W
  400     HC       2
          *

  401     KK   RPT22
  402     KM   ROUTE PT22 TO PT23
  403     RM       4     0.3   0.100
          *

  404     KK    B15B
  405     BA   0.954
  406     PB    2.77
  407     LS       0    75.0    13.0
  408     UD    0.71
          *

  409     KK    PT23
  410     KM   COMBINE PT22 AND BASIN B15B
  411     HC       2
          *

  412     KK RDVI151
  413     KM   RETURN FLOW PASSING THRU I151 (DCWA 1429)
  414     DR  DVI151
          *

  415     KK RDVI151
  416     KM   ROUTE DVI151 TO PT24
  417     RM       1   0.099   0.150
          *

  418     KK RDVI152
  419     KM   RETURN FLOW PASSING THRU I152 (IS15 0199)
  420     DR  DVI152
          *

  421     KK RDVI152
  422     KM   ROUTE DVI152 TO PT24
  423     RM       1   0.089   0.150
          *

  424     KK    PT24
  425     KM   COMBINE DVI151 AND DVI152
  426     HC       2
          *

  427     KK   RPT24
  428     KM   ROUTE PT24 TO PT25
  429     RM       1   0.086   0.150
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  430     KK    D009
  431     BA   3.621
  432     PB    3.31
  433     LS       0    83.0
  434     UD   0.510
          *

  435     KK   RD009
  436     KM   ROUTE BASIN D009 TO PT5
  437     RM       1     0.1     0.1
          *

  438     KK    D004
  439     BA   2.400
  440     PB    3.30
  441     LS       0    85.0
  442     UD   0.700
          *

  443     KK     PT5
  444     KM   COMBINE BASINS D009 AND D004
  445     HC       2
          *

  446     KK    RPT5
  447     KM   ROUTE PT5 TO PT6
  448     RM       2    0.44    0.15
          *

  449     KK     D08
  450     BA  11.912
  451     PB    3.28
  452     LS       0    85.0
  453     UD   1.650
          *

  454     KK     PT6
  455     KM   COMBINE PT5 AND BASIN D08
  456     HC       2
          *

  457     KK    RPT6
  458     KM   ROUTE PT6 TO PT7
  459     RM       3    0.81   0.150
          *

  460     KK    D010
  461     BA  10.434
  462     PB    3.15
  463     LS       0    84.0
  464     UD   1.050
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 465      KK     D07
 466      BA   4.280
 467      PB    3.20
 468      LS       0    84.0
 469      UD   1.100
          *

 470      KK     PT7
 471      KM   "COMBINE PT6, BASINS D010 AND D07"
 472      HC     3
          *

 473      KK    RPT7
 474      KM   ROUTE PT7 TO PT8
 475      RM       3   0.224   0.150
          *

 476      KK   D012B
 477      BA   0.566
 478      PB    2.77
 479      LS       0    83.0
 480      UD   0.642
          *

 481      KK     PT8
 482      KM   COMBINE BASIN D012B AND PT7
 483      HC       2
          *

 484      KK  DVPITT
 485      KM   DIVERSION EAST ACROSS LAS VEGAS BLVD. TO PITTMAN WATERSHED - DOES NOT RETURN
 486      KM   REFERENCED FROM 1995 PITTMAN WASH FIS RESTUDY BY NIMBUS
 487      KM   "MODIFIED TO RETAIN 10% OF ACTUAL DIVERTED FLOW TO DIVERT LATER AT ""DVROSE""
 488      DT  DVPITT
 489      DI       0    3586    3710    3835    3961    5795    7737
 490      DQ       0    1554    1618    1681    1747    2774    3933
          *

 491      KK  DVROSE
 492      KM   DIVERSION NORTH ACROSS ST. ROSE PARKWAY (FORMERLY LAKE MEAD DRIVE)
 493      KM   DIVERSION BYPASSES LDCDB VIA BASIN D5A AND COMBINES AT PT29
 494      KM   REFERENCED FROM 1995 PITTMAN WASH FIS RESTUDY BY NIMBUS
 495      DT  DVROSE
 496      DI       0    1673    1721    1770    2214    3021    3803
 497      DQ       0     359     371     384     396     579     774
          *

 498      KK    RPT8
 499      KM   ROUTE BYPASS FROM DVROSE AT PT8 TO PT25
 500      RM       6    0.49   0.150
          *
```

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 501          KK     D4A
 502          BA   1.873
 503          PB    2.80
 504          LS       0    83.8     0.0
 505          UD   0.245
              *
              *    THE FOLLOWING COMBINE POINT IS ADDED TO CLARIFY THE EXISTING FLOWS
              *    BETWEEN LAS VEGAS BLVD AND PT25(B)

 506          KK   PT25A COMBINES FLOWS WEST OF LAS VEGAS BLVD
 507          KM   "COMBINE PT24, BASIN D4A, AND BYPASS FROM PT8"
 508          HC       3
              *
              *

 509          KK RDVI153
 510          KM   RETURN FLOW PASSING THRU I153 AT PT14 (IS15 0233)
 511          DR  DVI153
              *

 512          KK RDVI153
 513          KM   ROUTE DVI153 TO PT25
 514          RM       1   0.112   0.150

 515          KK   RPT25
 516          KM   ROUTE PT25 TO PT26
 517          RM       1   0.099   0.150
              *

 518          KK   PT25B
 519          KM     COMBINE PT25A AND DVI153
 520          HC       2
              *

 521          KK     D4B
 522          BA   2.033
 523          PB    2.80
 524          LS       0    83.8     8.0
 525          UD   0.243
              *

 526          KK    PT26
 527          KM   COMBINE PT25 AND BASIN D4
 528          HC       2
              *

 529          KK   RPT26
 530          KM   ROUTE PT26 TO LOWER DUCK CREEK DETENTION BASIN (LDCDB)
 531          RM       1   0.083   0.150
              *
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 532          KK RDVI154
 533          KM   "RETURN FLOW PASSING THRU I15 BRIDGE, I154 (IS15 0315)"
 534          DR  DVI154
              *

 535          KK RDVI154
 536          KM   ROUTE DVI154 TO LAS VEGAS BLVD.
 537          RD    2700   0.007   0.015       0    TRAP      25       2
              *

 538          KK RDVI154
 539          KM   ROUTE DVI154 FROM LAS VEGAS BLVD. TO PT27
 540          KM   "2-78"" CMP (EQUIVALENT RECTANGULAR CHANNEL DETERMINED BY COMPARING VELOCITY)
 541          RD    1300   0.017   0.015       0    TRAP      28       0
              *

 542          KK RDVI155
 543          KM   "RETURN FLOW PASSING THRU I15 BRIDGE, I155 (IS15 0359)"
 544          DR  DVI155
              *

 545          KK RDVI155
 546          KM   ROUTE DVI155 TO AGATE AVENUE
 547          RD    1100    0.01   0.040       0    TRAP      15       3
              *

 548          KK RDVI155
 549          KM   ROUTE DVI155 FROM AGATE AVENUE TO LAS VEGAS BLVD.
 550          KM   "3-10'x5' RCB, INCLUDES PORTION OF TRAP CHANNEL"
 551          RD    1530    0.01   0.015       0    TRAP      30       0
              *

 552          KK RDVI155
 553          KM   ROUTE DVI155 FROM LAS VEGAS BLVD. TO PT27
 554          KM   "2-96"" CMP (EQUIVALENT RECTANGULAR CHANNEL DETERMINED BY COMPARING VELOCITY)
 555          RD     800   0.006   0.015       0    TRAP      35       0
              *

 556          KK RDVI155
 557          KM   ROUTE DVI155 FROM LAS VEGAS BLVD. TO PT27
 558          KM   "2-84"" CMP (EQUIVALENT RECTANGULAR CHANNEL DETERMINED BY COMPARING VELOCITY)
 559          RD    1100   0.012   0.015       0    TRAP      30       0
              *

 560          KK    PT27
 561          KM   COMBINE DVI154 AND DVI155
 562          HC       2
              *
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  563         KK   RPT27
  564         KM   ROUTE PT27 TO LOWER DUCK CREEK DETENTION BASIN (LDCDB)
  565         KM   "3-96"" CIPCP (EQUIVALENT RECTANGULAR CHANNEL)"
  566         RD    1100   0.009   0.015       0    TRAP      56       0
              *

  567         KK   RPT27
  568         KM   ROUTE PT27 TO LOWER DUCK CREEK DETENTION BASIN (LDCDB)
  569         KM   3-8'x8' RCB (EQUIVALENT RECTANGULAR CHANNEL)
  570         RD     570   0.004   0.015       0    TRAP      24       0
              *

  571         KK    B18C
  572         BA   1.259
  573         PB    2.77
  574         LS       0    75.4    25.0
  575         UD   0.380
              *

  576         KK    PT28
  577         KM   "COMBINE PT26, PT27, AND BASIN B18C AT LDCDB"
  578         HC       3
              *

  579         KK   LDCDB
  580         KM   LOWER DUCK CREEK DETENTION BASIN
  581         RS       1    STOR       0
  582         SV       0     2.8    37.5   120.3     229     340   453.8     570     689     810
  583         SV     934    1061    1190
  584         SE    2183    2184    2186    2188    2190    2192    2194    2196    2198    2200
  585         SE    2202    2204    2206
  586         SQ       0     126     654    1825    3310    4310    5118    5815    6437    7004
  587         SQ    7528    8018    8480
  588         SE    2183    2184    2186    2188    2190    2192    2194    2196    2198    2200
  589         SE    2202    2204    2206
  590         KO       1
              *

  591         KK  RLDCDB
  592         KM   ROUTE THE OUTFALL FROM THE LOWER DUCK CREEK DETENTION BASIN TO PT29
  593         RD    1100   0.004   0.015       0    TRAP      46     1.5
              *

  594         KK     D5A
  595         BA   1.325
  596         PB    2.79
  597         LS       0    88.0    15.0
  598         UD   0.350
              *
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 599          KK    RD5A
 600          KM   ROUTE BASIN D5A TO PT29
 601          RM       1     0.12    0.150
              *

 602          KK RDVROSE
 603          KM   RETURN FLOW CROSSING ST. ROSE PARKWAY (FORMERLY LAKE MEAD DRIVE)
 604          DR  DVROSE
              *

 605          KK RDVROSE
 606          KM   ROUTE DIVERSION DVROSE TO PT29
 607          RM       6     0.49    0.150
              *

 608          KK    PT29
 609          KM   "COMBINE BASIN D5A, BYPASS FROM DVROSE, AND OUTFALL FROM LDCDB"
 610          HC       3
              *

 611          KK   RPT29
 612          KM   ROUTE PT29 TO PT30
 613          RD    1800    0.011    0.015        0    TRAP       46      1.5
              *

 614          KK    B16B
 615          BA   0.701
 616          PB    2.77
 617          LS       0     83.1     32.0
 618          UD   0.380
              *

 619          KK   RB16B
 620          KM   ROUTE BASIN B16B TO PT30
 621          RD    1900    0.008    0.015        0    TRAP        0       50
              *

 622          KK    PT30
 623          KM   COMBINE PT29 AND BASIN B16B
 624          HC       2
              *

 625          KK   RPT30
 626          KM   ROUTE PT30 TO PT31
 627          RD    2900    0.005    0.015        0    TRAP       20        3
              *

 628          KK    B16A
 629          BA   0.906
 630          PB    2.77
 631          LS       0     78.2     17.0
 632          UD   0.710
              *
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  633     KK     D5B
  634     BA   0.602
  635     PB    2.77
  636     LS       0    82.8    46.0
  637     UD   0.710
          *

  638     KK     PT31
  639     KM   "COMBINE PT30, BASINS B16A AND D5B"
  640     HC        3
          *

  641     KK   RPT31
  642     KM   ROUTE PT31 TO PT32
  643     RD    3200   0.016   0.015        0    TRAP      15        1
          *

  644     KK     PT32
  645     KM   COMBINE PT23 AND PT31 AT DUCK CREEK/MIDDLE BRANCH BLUE DIAMOND CONFLUENCE
  646     HC        2
          *

  647     KK   RPT32
  648     KM   ROUTE PT32 TO PT34
  649     RD    2700   0.009   0.015        0    TRAP      70        2
          *

  650     KK  HYDRO2
  651     KM   INFLOW HYDROGRAPH
  652     KM   "PT C-11 REFERENCED FROM ""LOMR FOR AREA DOWNSTREAM OF UPPER BLUE DIAMOND D.B
  653     KM   "SEE COMBINATION POINT C-11, DARF RATIO 0.98 OF HEC-1 FROM REFERENCED LOMR"
  654     BA   0.380
  655     QI        0        0        0        0        0        0        0        0        0        0
  656     QI        0        0        0        0        0        0        0        0        0        0
  657     QI        0        0        0        0        0        0        0        0        0        0
  658     QI        0        0        0        0        0        0        0        0        0        0
  659     QI        0        0        1        3        5        9       14       19       23       27
  660     QI       30       32       33       33       32       31       29       28       27       27
  661     QI       27       27       32       36       36       35       33       31       29       26
  662     QI       24       22       20       19       17       16       15       14       13       12
  663     QI       11       10        9        8        8        7        6        6        5        5
  664     QI        4        4        4        3        3        3        3        3        2        2
  665     QI        2        2        2        2        2        2        1        1        1        1
  666     QI        1        1        1        1        1        1        1        1        1        1
  667     QI        1        1        1        1        1        1        1        0        0        0
  668     QI        0        0        0        0        0        0        0        0        0        0
  669     QI        0        0        0        0        0        0        0        0        0        0
  670     QI        0        0        0        0        0        0        0        0        0        0
  671     QI        0        0        0        0        0        0        0        0        0        0
  672     QI        0        0        0        0        0        0        0        0        0        0
  673     QI        0        0        0        0        0        0        0        0        0        0
  674     QI        0        0        0        0        0        0        0        0        0        0
  675     QI        0        0        0        0        0        0        0        0        0        0
  676     QI        0        0        0        0        0        0        0        0        0        0
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
 677      QI       0       0       0       0       0       0       0       0       0       0
 678      QI       0       0       0       0       0       0       0       0       0       0
 679      QI       0       0       0       0       0       0       0       0       0       0
 680      QI       0       0       0       0       0       0       0       0       0       0
 681      QI       0       0       0       0       0       0       0       0       0       0
 682      QI       0       0       0       0       0       0       0       0       0       0
 683      QI       0       0       0       0       0       0       0       0       0       0
 684      QI       0       0       0       0       0       0       0       0       0       0
          *

 685      KK RHYDRO2
 686      KM   ROUTE HYDRO2 TO PT33W
 687      RM       8    0.76   0.150
          *

 688      KK     B12
 689      BA   0.969
 690      PB    2.77
 691      LS       0    68.4     1.0
 692      UD   0.390
          *

 693      KK   PT33W
 694      KM   COMBINE HYDRO2 AND BASIN B12
 695      HC       2
          *

 696      KK  RDVBD7
 697      KM   "RETURN FLOW SPLIT, DVBD7, FROM MIDDLE BRANCH "
 698      DR   DVBD7
          *

 699      KK  RDVBD7
 700      KM   ROUTE DVBD7 TO PT33
 701      RM       2     0.2   0.150
          *

 702      KK    PT33
 703      KM   COMBINE PT33W AND DVBD7
 704      HC       2
          *

 705      KK   RPT33
 706      KM   ROUTE PT33 TO PT34W
 707      RM       4     0.3   0.100
          *

 708      KK    B15A
 709      BA   0.959
 710      PB    2.77
 711      LS       0    77.6    14.0
 712      UD   0.500
          *
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  713     KK   PT34W
  714     KM   COMBINE PT33 AND BASIN B15A
  715     HC       2
          *

  716     KK    PT34
  717     KM   COMBINE PT34W AND PT32
  718     HC       2
          *

  719     KK    MNWB
  720     BA   0.442
  721     PB    2.77
  722     LS       0    85.0      2.0
  723     UD   0.742
          *

  724     KK   RMNWB
  725     KM   ROUTE MNWB NORTH ALONG I15 TO PT35
  726     RD    2200   0.007   0.025        0    TRAP       20       10
          *

  727     KK    MNWC
  728     BA   0.596
  729     PB    2.77
  730     LS       0    85.0      7.0
  731     UD   0.738
          *

  732     KK    PT35
  733     KM   COMBINE BASINS MNWB AND MNWC
  734     HC       2
          *

  735     KK   RPT35
  736     KM   ROUTE PT35 TO PT36
  737     RM       1   0.055   0.150
          *

  738     KK    MNWD
  739     BA   0.078
  740     PB    2.77
  741     LS       0    85.0    13.0
  742     UD   0.321
          *

  743     KK    PT36
  744     KM   COMBINE PT35 AND BASIN MNWD
  745     HC       2
          *
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  746         KK   RPT36
  747         KM   ROUTE PT36 TO PT37
  748         RM       2   0.192   0.150
              *

  749         KK     MC2
  750         BA   0.919
  751         PB    2.77
  752         LS       0    74.9    28.0
  753         UD   0.873
              *

  754         KK    PT37
  755         KM   COMBINE PT36 AND BASIN MC2
  756         HC       2
              *

  757         KK   RPT37
  758         KM   ROUTE PT37 TO PT38
  759         RD    5200    0.01   0.015       0    TRAP      20       2
              *

  760         KK    B10A
  761         BA   1.601
  762         PB    2.77
  763         LS       0    74.9    32.0
  764         UD   0.217
              *

  765         KK    PT38
  766         KM   COMBINE PT37 AND BASIN B10A
  767         HC       2
              *

  768         KK   RPT38
  769         KM   ROUTE PT38 TO PT39
  770         RD    2100   0.002   0.015       0    TRAP      20       2
              *

  771         KK    PT39
  772         KM   COMBINE PT34 AND PT38
  773         HC       2
              *

  774         KK   RPT39
  775         KM   ROUTE PT39 TO PT40
  776         RD    2500   0.006   0.025       0    TRAP      70       2
              *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  777     KK      D6
  778     BA   1.564
  779     PB    2.77
  780     LS       0    78.3    43.0
  781     UD   0.500
          *

  782     KK     PT40
  783     KM   COMBINE PT39 AND BASIN D6
  784     HC       2
          *

  785     KK   RPT40
  786     KM   ROUTE PT40 TO PT41
  787     RM       1    0.08   0.200
          *

  788     KK      D7
  789     BA   0.850
  790     PB    2.77
  791     LS       0    77.3    23.0
  792     UD   0.710
          *

  793     KK     PT41
  794     KM   COMBINE PT40 AND BASIN D7
  795     HC       2
          *

  796     KK   RPT41
  797     KM   ROUTE PT41 TO PT42
  798     RD    4150   0.006   0.015       0    TRAP      50       0
          *

  799     KK      D8
  800     BA   1.258
  801     PB    2.77
  802     LS       0    77.8    34.0
  803     UD   0.230
          *

  804     KK     RD8
  805     KM   ROUTE BASIN D8 TO PT42
  806     RM       1   0.088   0.150
          *

  807     KK     PT42
  808     KM   COMBINE PT41 AND BASIN D8
  809     HC       2
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  810     KK   RPT42
  811     KM   ROUTE PT42 TO PT44
  812     RD    3650   0.011   0.015       0    TRAP      28       2
          *

  813     KK    B10B
  814     BA   0.848
  815     PB    2.77
  816     LS       0    74.9    44.0
  817     UD   0.687
          *

  818     KK   RB10B
  819     KM   ROUTE BASIN B10B TO PT43
  820     RM       6    0.46   0.100
          *

  821     KK     D9A
  822     BA   0.861
  823     PB    2.77
  824     LS       0    72.8    16.0
  825     UD   1.100
          *

  826     KK    PT43
  827     KM   COMBINE BASINS B10B AND D9A
  828     HC       2
          *

  829     KK   RPT43
  830     KM   ROUTE PT43 TO PT44
  831     RD    4050    0.01   0.016       0    TRAP       0      16
          *

  832     KK    PT44
  833     KM   COMBINE PT42 AND PT43
  834     HC       2
          *

  835     KK   RPT44
  836     KM   ROUTE PT44 TO PT45
  837     RM       1   0.119   0.150
          *

  838     KK     D9B
  839     BA   1.544
  840     PB    2.77
  841     LS       0    77.8    17.0
  842     UD   0.410
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 843      KK    PT45
 844      KM   COMBINE PT44 AND BASIN D9B
 845      HC       2
          *

 846      KK   RPT45
 847      KM   ROUTE PT45 TO PT46
 848      RM       2   0.184   0.150
          *

 849      KK     D10
 850      BA   2.508
 851      PB    2.77
 852      LS       0    79.0    33.0
 853      UD   0.440
          *

 854      KK    PT46
 855      KM   COMBINE PT45 AND BASIN D10
 856      HC       2
          *

 857      KK   RPT46
 858      KM   ROUTE PT46 TO PT48
 859      RD    2500   0.018   0.035       0    TRAP      75       2
          *

 860      KK      MC
 861      KM   "TLAG AND AREA CALCULATED, CN REFERENCED FROM 1996 MPU"
 862      KM   THEREFORE NO INCREASE IN PERCENT IMPERVIOUS
 863      BA   2.804
 864      PB    2.77
 865      LS       0    91.0
 866      UD   0.244
          *

 867      KK   TORAW
 868      KM   DIVERT FLOW WHICH BYPASSES DETENTION BASIN
 869      DT   TORAW
 870      DI       0     100     500    1000    2000    3000    4000
 871      DQ       0      40     100     200     400     570     760
          *

 872      KK    MCDB
 873      KM   MCCARRAN AIRPORT DETENTION FACILITIES
 874      KM   SIMULATION OF TWO DETENTION BASINS - MCCARRAN EAST AND SPENCER
 875      RS       1    STOR      -1
 876      SV       0       8      40      70     100     160     210     500
 877      SQ       0      30      40      55      65      80      85      87
 878      SE       0       2       4       6       8      12      15      16
 879      KO       1
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  880     KK   RMCDB
  881     KM   ROUTE OUTFALL FROM MCDB TO PT47
  882     RD    3300   0.006   0.013       0    CIRC       4       0
          *

  883     KK  RTORAW
  884     KM   FLOW BYPASSING THE MCCARRAN DETENTION FACILITIES RETURNED IN RAWHIDE CHANNEL
  885     DR   TORAW
          *

  886     KK    PT47
  887     KM   COMBINE OUTFALL FROM MCCARRAN DETENTION FACILITIES AND BYPASSED FLOW
  888     HC       2
          *

  889     KK   RPT47
  890     KM   ROUTE PT47 THRU RAWHIDE CHANNEL TO PT48W
  891     RD   15700   0.015   0.015       0    TRAP      11     1.5
          *

  892     KK      RH
  893     BA   1.355
  894     PB    2.77
  895     LS       0    72.0     6.0
  896     UD   0.340
          *

  897     KK   PT48W
  898     KM   COMBINE PT47 AND BASIN RH
  899     HC       2
          *

  900     KK     B20
  901     BA   0.790
  902     PB    2.77
  903     LS       0    82.4     8.0
  904     UD   0.710
          *

  905     KK    RB20
  906     KM   ROUTE BASIN B20 TO PT48
  907     KM   MUSKINGUM ROUTING UNSTABLE
  908     RD    1800   0.017   0.030       0    TRAP      30      10
          *

  909     KK    PT48
  910     KM   "COMBINE PT46, PT48W, AND BASIN B20"
  911     HC       3
          *
```

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  912     KK   RPT48
  913     KM   ROUTE PT48 TO PT50
  914     RM       1   0.067   0.150
          *

  915     KK     D12
  916     BA   0.176
  917     PB    2.77
  918     LS       0    77.8     7.0
  919     UD   0.710
          *

  920     KK    RD12
  921     KM   ROUTE BASIN D12 TO PT49
  922     KM   MUSKINGUM ROUTING UNSTABLE
  923     RD    1850   0.044   0.150       0    TRAP      50      10
          *

  924     KK    D11A
  925     BA   0.159
  926     PB    2.77
  927     LS       0    77.3     5.0
  928     UD   0.160
          *

  929     KK    PT49
  930     KM   COMBINE BASINS D12 AND D11A
  931     HC       2
          *

  932     KK   RPT49
  933     KM   ROUTE PT49 TO PT50
  934     KM   MUSKINGUM ROUTING UNSTABLE
  935     RD    1050   0.019   0.150       0    TRAP      45      10
          *

  936     KK    PT50
  937     KM   COMBINE PT48 AND PT49
  938     HC       2
          *

  939     KK   RPT50
  940     KM   ROUTE PT50 TO PT51
  941     RD    7000   0.003   0.015       0    TRAP      60       2
          *

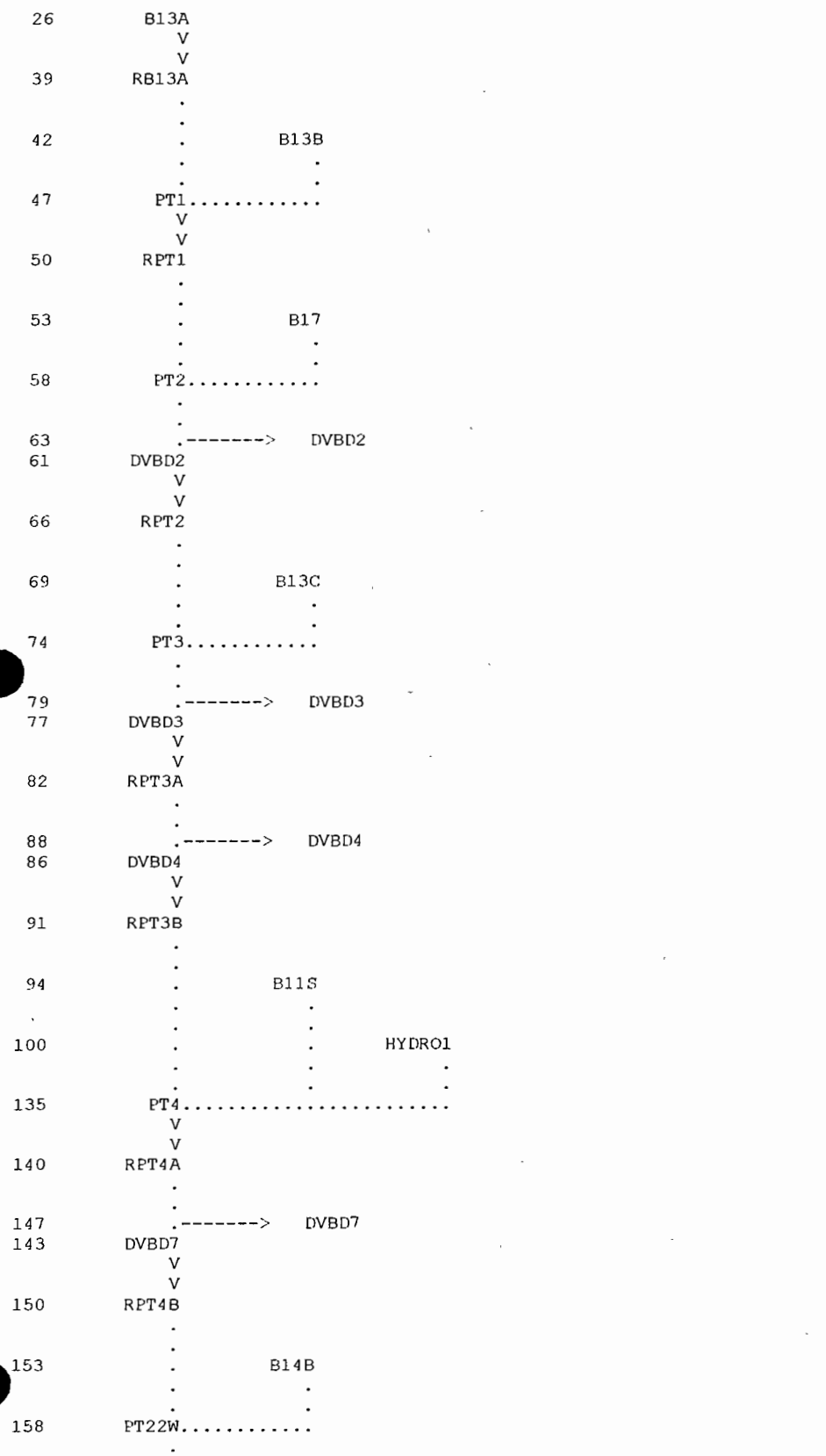
  942     KK    D11B
  943     BA   0.987
  944     PB    2.77
  945     LS       0    82.2    12.0
  946     UD   0.220
          *
```

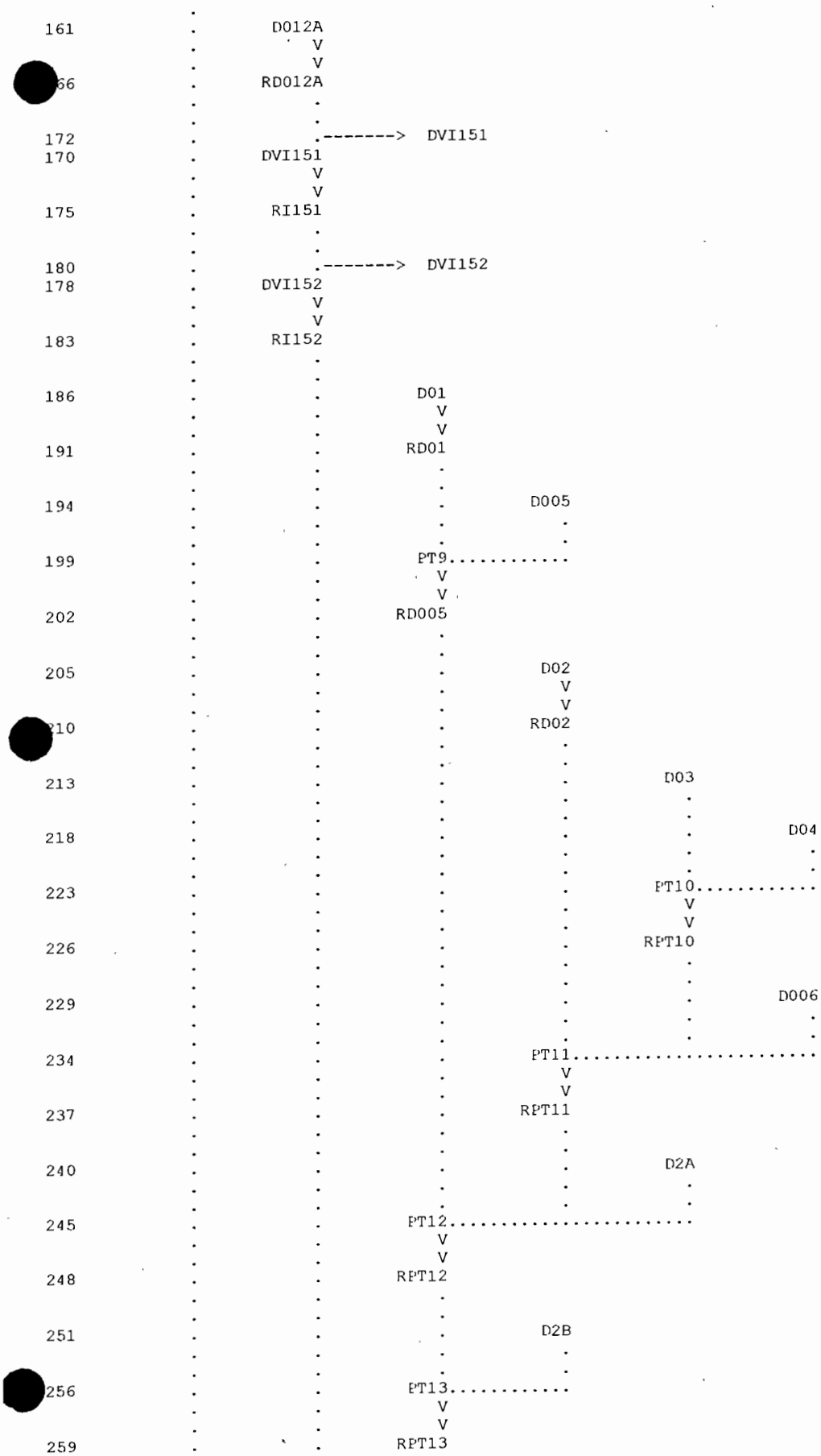
```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  947         KK    PT51
  948         KM   COMBINE PT50 AND BASIN D11B
  949         HC       2
  950         ZZ
```

SCHEMATIC DIAGRAM OF STREAM NETWORK

INPUT
LINE (V) ROUTING (---->) DIVERSION OR PUMP FLOW
NO. (.) CONNECTOR (<---) RETURN OF DIVERTED OR PUMPED FLOW

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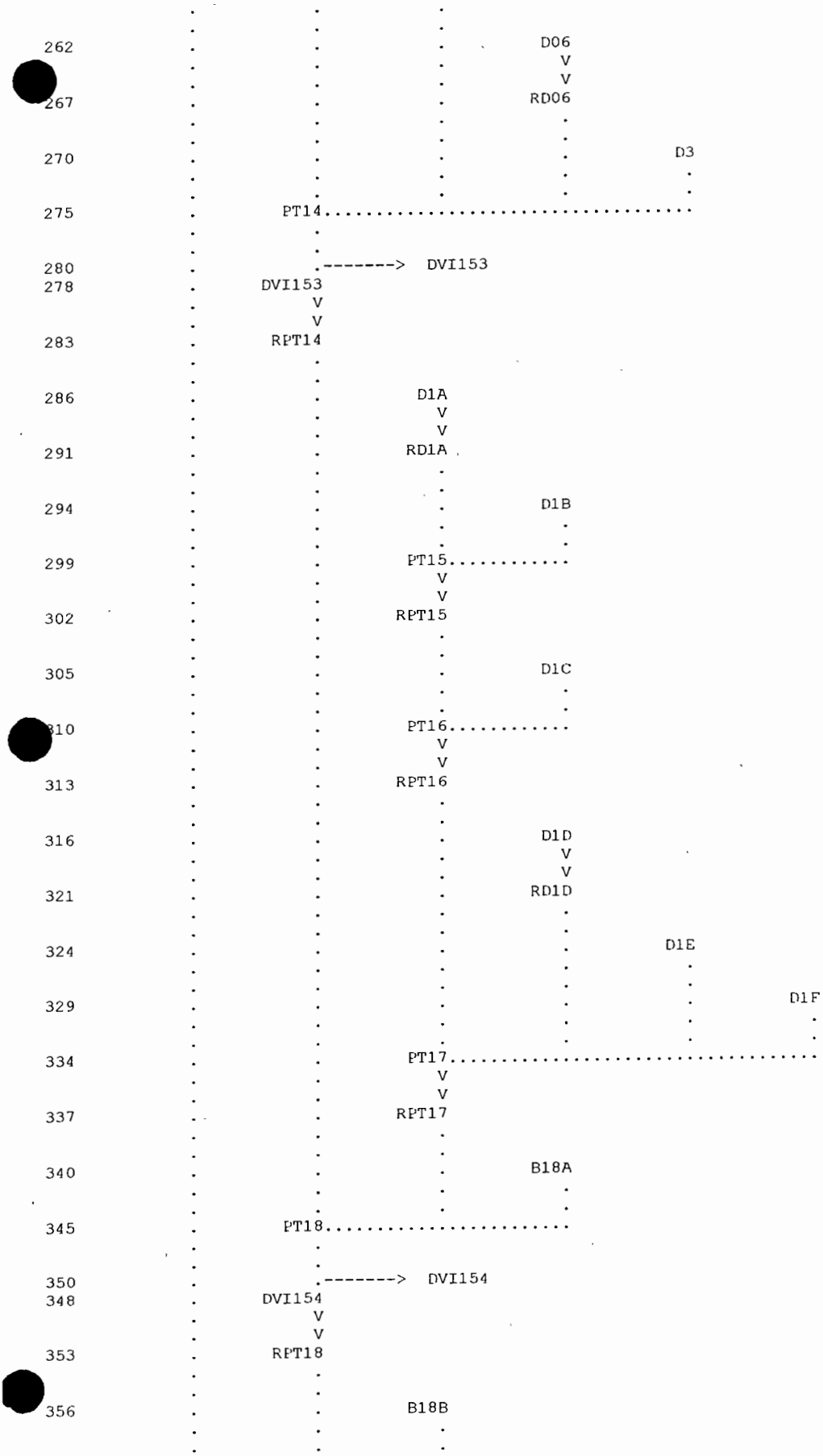
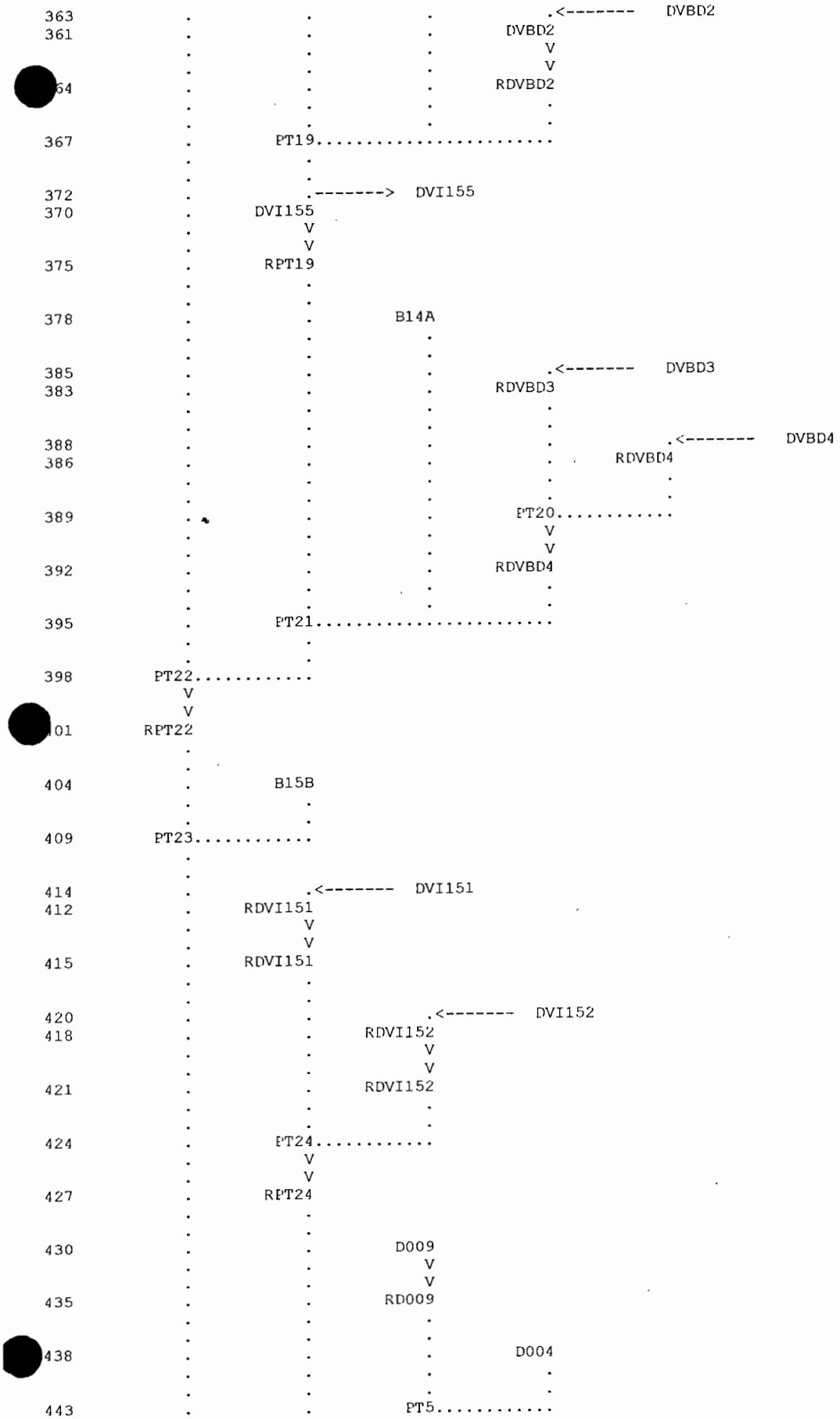
D012A
V
V
166
RD012A
172
DVI151
170
DVI151
V
V
175
RI151
180
DVI152
178
DVI152
V
V
183
RI152
186
D01
V
V
191
RD01
194
D005
199
PT9
V
V
202
RD005
205
D02
V
V
210
RD02
213
D03
218
D04
223
PT10
V
V
226
RPT10
229
D006
234
PT11
V
V
237
RPT11
240
D2A
245
PT12
V
V
248
RPT12
251
D2B
256
PT13
V
V
259
RPT13


262
D06
267
RD06
270
D3
275
PT14
280
278
DVI153
283
RPT14
286
D1A
291
RD1A
294
D1B
299
PT15
302
RPT15
305
D1C
310
PT16
313
RPT16
316
D1D
321
RD1D
324
D1E
329
D1F
334
PT17
337
RPT17
340
B18A
345
PT18
350
348
DVI154
353
RPT18
356
B18B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389
392
395
398
401
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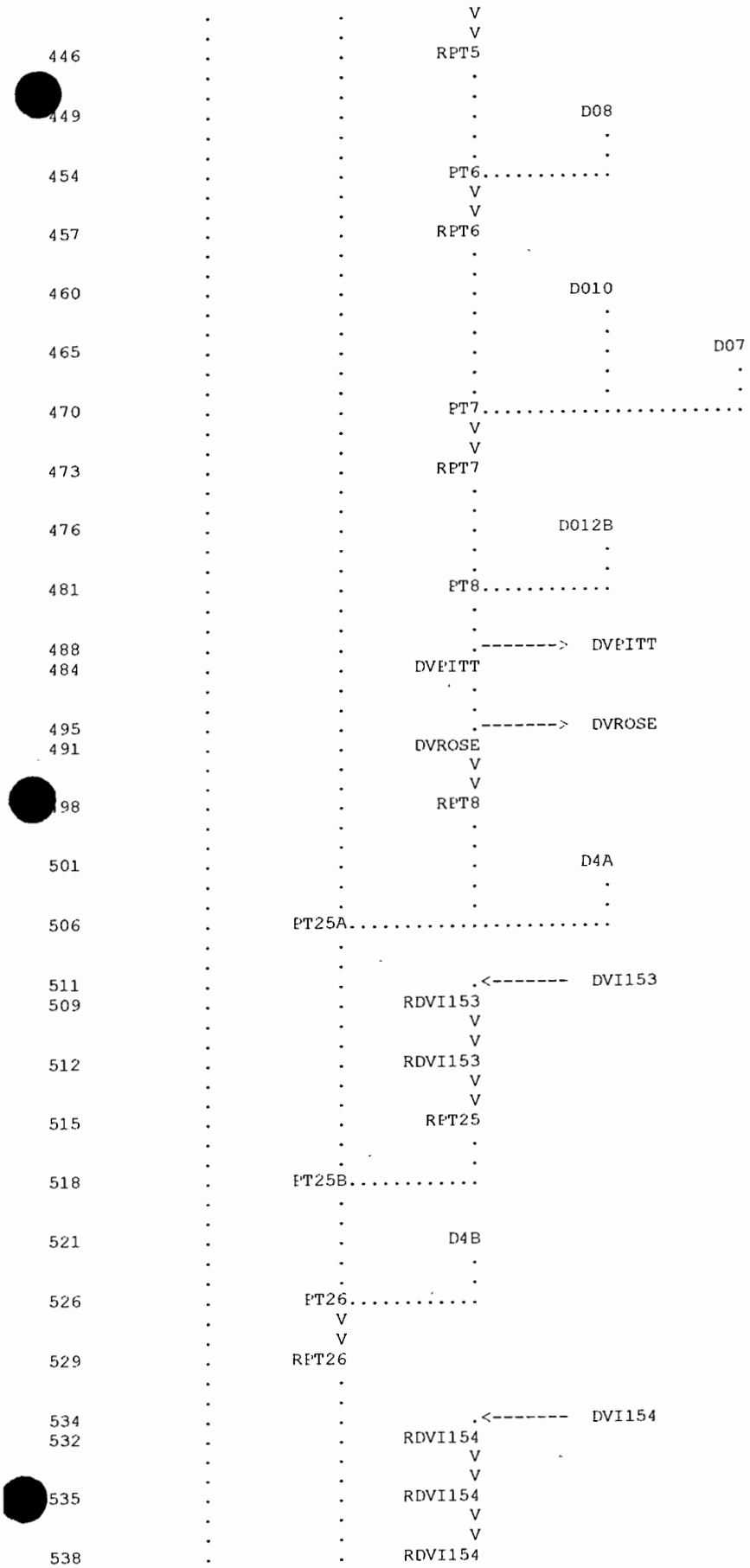
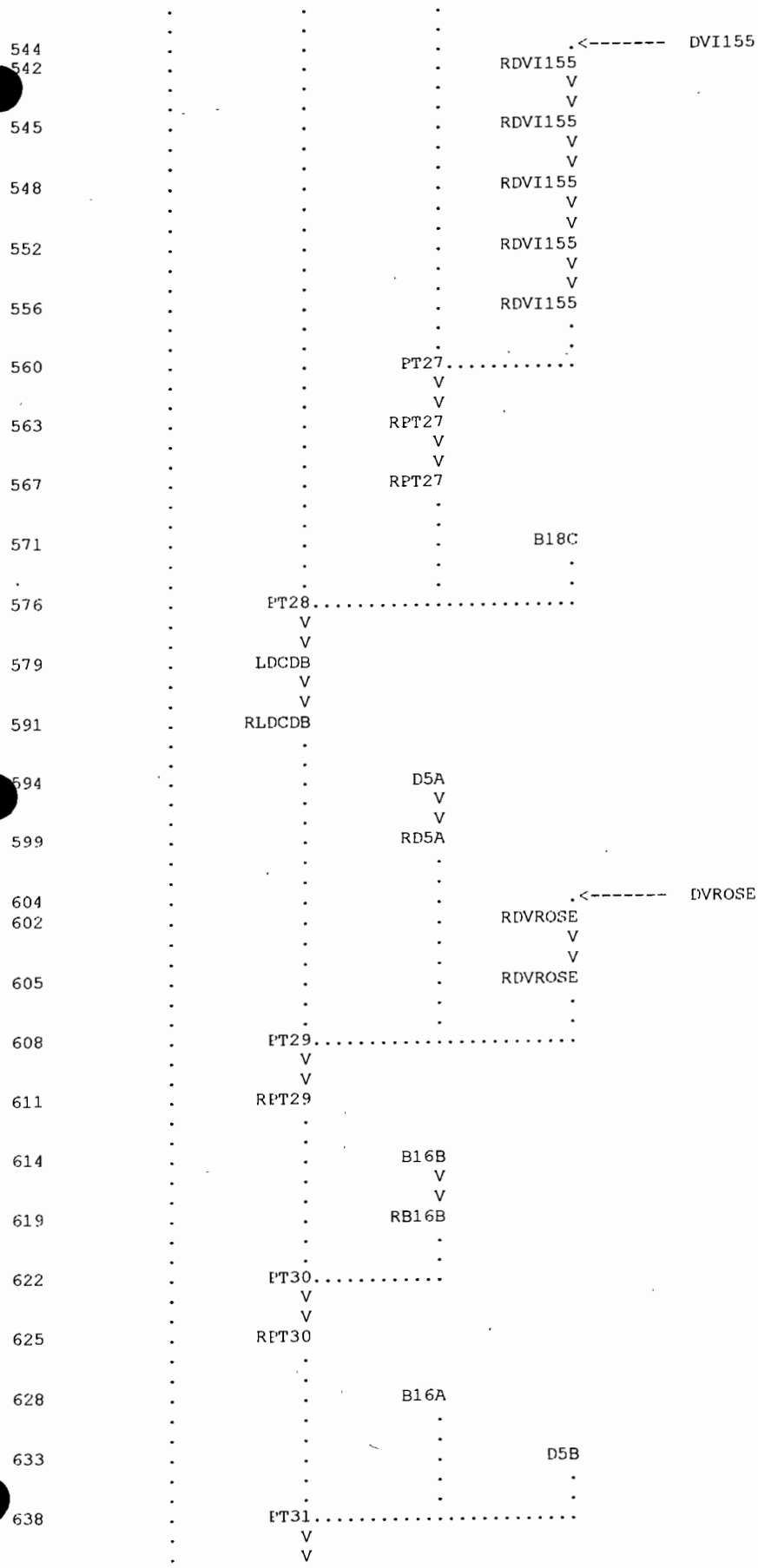
409
414
412
415
420
418
421
424
427
430
435
438
443
DVBD2
DVBD2
RDVBD2
PT19
DVI155
DVI155
RPT19
B14A
DVBD3
RDVBD3
DVBD4
RDVBD4
PT20
RDVBD4
PT21
PT22
RPT22
B15B
PT23
DVI151
RDVI151
RDVI151
DVI152
RDVI152
RDVI152
PT24
RPT24
D009
RD009
D004
PT5


V
V
446 RPT5
449 D08
454 PT6
V
V
457 RPT6
460 D010
465 D07
470 PT7
V
V
473 RPT7
476 D012B
481 PT8
488 DVPITT
484 DVPITT
495 DVROSE
491 DVROSE
V
V
498 RPT8
501 D4A
506 PT25A
511 DVI153
509 RDVI153
V
V
512 RDVI153
V
V
515 RPT25
518 PT25B
521 D4B
526 PT26
V
V
529 RPT26
534 DVI154
532 RDVI154
V
V
535 RDVI154
V
V
538 RDVI154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576
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594
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602
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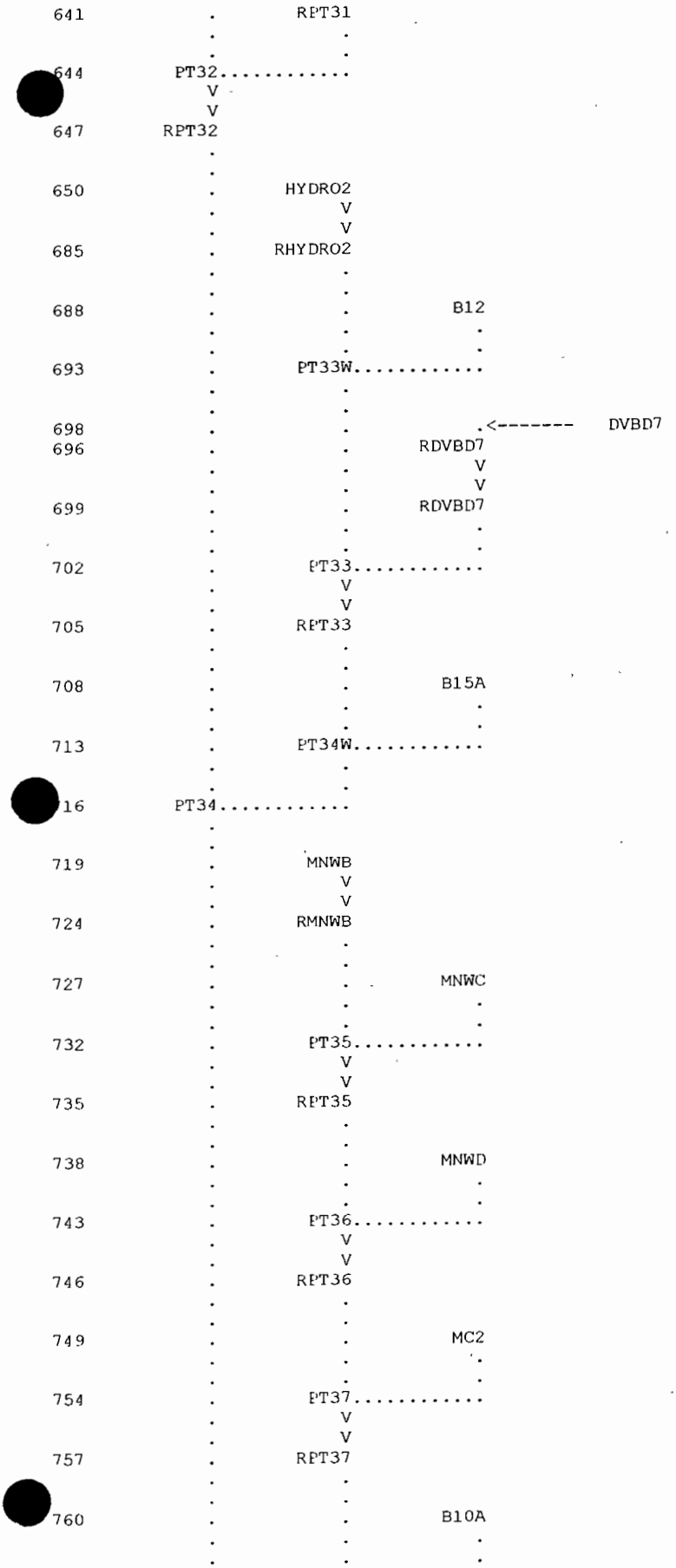
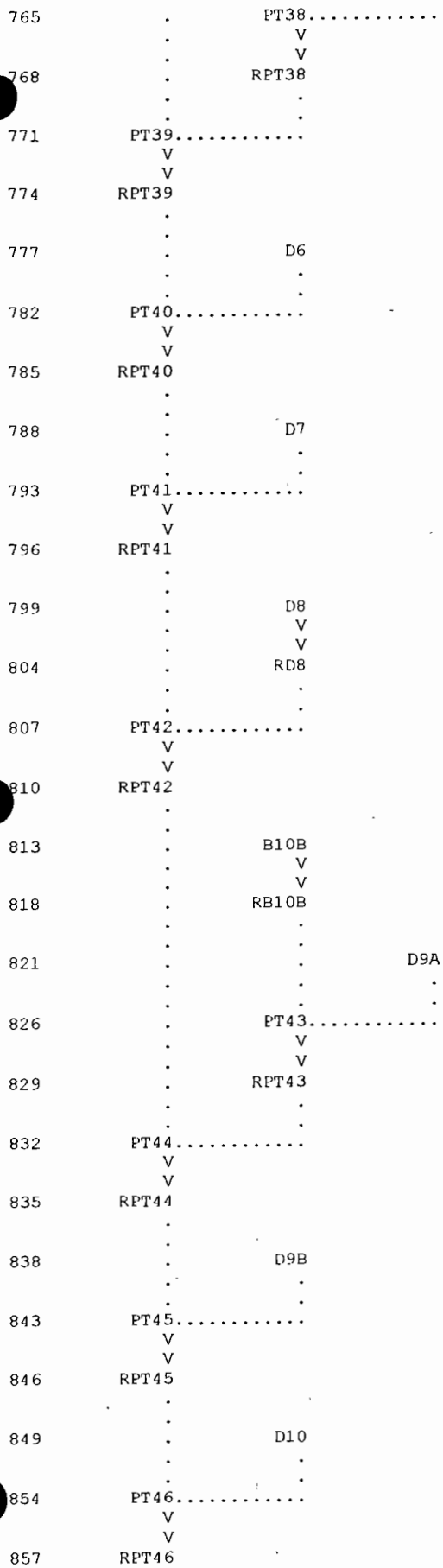
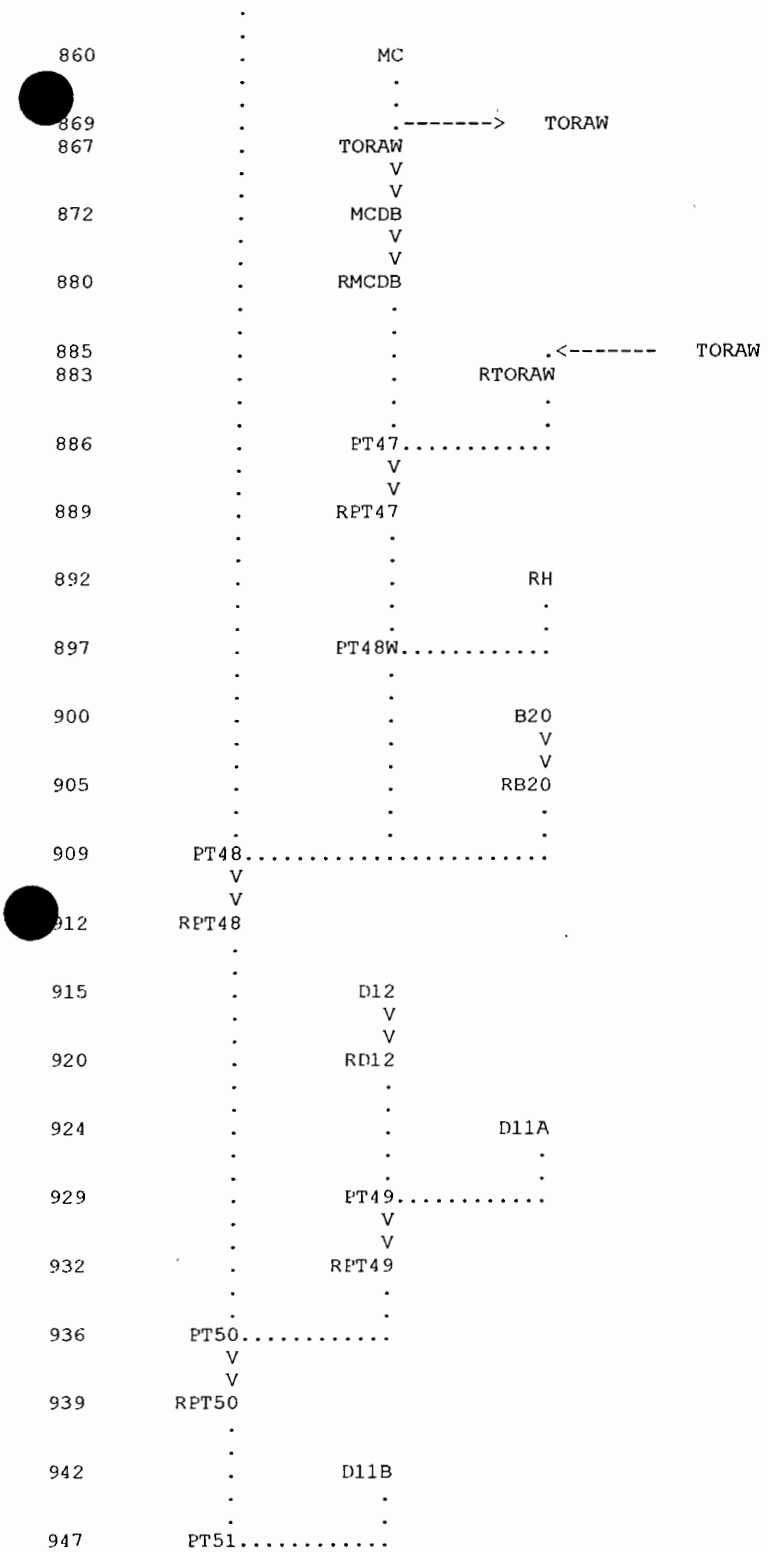
608
611
614
619
622
625
628
633
638
DVI155
RDVI155
RDVI155
RDVI155
RDVI155
RDVI155
PT27
RPT27
RPT27
B18C
PT28
LDCDB
RLDCDB
D5A
RD5A
DVROSE
RDVROSE
RDVROSE
PT29
RPT29
B16B
RB16B
PT30
RPT30
B16A
D5B
PT31


641 RPT31
644 PT32
647 RPT32
650 HYDRO2
685 RHYDRO2
688 B12
693 PT33W
698 DVBD7
696 RDVBD7
699 RDVBD7
702 PT33
705 RPT33
708 B15A
713 PT34W
716 PT34
719 MNWB
724 RMNWB
727 MNWC
732 PT35
735 RPT35
738 MNWD
743 PT36
746 RPT36
749 MC2
754 PT37
757 RPT37
760 B10A


765
PT38
768
RPT38
771
PT39
774
RPT39
777
D6
782
PT40
785
RPT40
788
D7
793
PT41
796
RPT41
799
D8
804
RD8
807
PT42
810
RPT42
813
B10B
818
RB10B
821
D9A
826
PT43
829
RPT43
832
PT44
835
RPT44
838
D9B
843
PT45
846
RPT45
849
D10
854
PT46
857
RPT46



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

HEC1 S/N: 1333000362 HMVersion: 6.40 Data File: duck5.txt

```
**************************************                    ****************************
*                                    *                    *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                *    U.S. ARMY CORPS OF ENGI
*            SEPTEMBER 1990            *                *    HYDROLOGIC ENGINEERING
*             VERSION 4.0              *                *         609 SECOND STREET
*                                      *                *       DAVIS, CALIFORNIA 95
*  RUN DATE  03/21/2002  TIME  09:09:37 *                *          (916) 756-1104
*                                      *                *
**************************************                    ****************************
```

DUCK CREEK/BLUE DIAMOND WASHES FIS RESTUDY
"G.C. WALLACE, INC. BY MJL"
DUCK5.XLS
"MODEL BASED FROM HEC-1 FILE, BDE100UN, FROM 1991 LAS VEGAS VALLEY FIS"
"BY JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC."
UPDATED PRECIPITATION VALUES
% IMPERVIOUS ADDED TO LS CARD FOR DEVELOPMENT SINCE 1990
ADDITIONAL DIVERSIONS ADDED
DESIGN STORM = 100-YEAR 6-HOUR STORM
STORM DISTRIBUTION = SDN5
JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

AREA (SQUARE MILES)	DARF
12 - 16	0.832
16 - 20	0.804
20 - 30	0.765
30 - 40	0.725
40 - 50	0.695
50 -100	0.640
100 - 150	0.580
150 - 200	0.530

```
 24 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ          120  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME         0955  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL      .08 HOURS
                       TOTAL TIME BASE     9.92 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                    .83       .80       .76       .73       .69       .64       .58       .53

** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***
```

```
          **************
          *            *
579 KK    *     LDCDB  *
          *            *
          **************

590 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

581 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC       .00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

582 SV            STORAGE          .0       2.8      37.5     120.3     229.0     340.0     453.8     570.0     689.0
                                 934.0    1061.0    1190.0

584 SE          ELEVATION      2183.00   2184.00   2186.00   2188.00   2190.00   2192.00   2194.00   2196.00   2198.00
                               2202.00   2204.00   2206.00

586 SQ          DISCHARGE         0.       126.      654.     1825.     3310.     4310.     5118.     5815.     6437.
                               7528.     8018.     8480.

588 SE          ELEVATION      2183.00   2184.00   2186.00   2188.00   2190.00   2192.00   2194.00   2196.00   2198.00
                               2202.00   2204.00   2206.00

                                                    ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                STORAGE          .00      2.80     37.50    120.30    229.00    340.00    453.80    570.00    689.00    810.00
                OUTFLOW          .00    126.00    654.00   1825.00   3310.00   4310.00   5118.00   5815.00   6437.00   7004.00
              ELEVATION      2183.00   2184.00   2186.00   2188.00   2190.00   2192.00   2194.00   2196.00   2198.00   2200.00

                STORAGE       934.00   1061.00   1190.00
                OUTFLOW      7528.00   8018.00   8480.00
              ELEVATION      2202.00   2204.00   2206.00

WARNING --- ROUTED OUTFLOW (   8505.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   8704.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   8902.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   9100.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   9297.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   9491.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   9682.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (   9868.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10048.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10222.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10388.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10545.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10692.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10829.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  10955.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  11069.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  11172.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (  11262.) IS GREATER THAN MAXIMUM OUTFLOW (   8480.) IN STORAGE-OUTFLOW TABLE
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WARNING --- ROUTED OUTFLOW (11341.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11407.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11460.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11501.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11529.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11544.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11547.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11537.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11516.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11482.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11438.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11384.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11321.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11249.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11169.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11081.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10986.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10883.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10773.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10656.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10532.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10402.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10265.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10124.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9978.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9829.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .83

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	724.	42.4	2186.1	1		0640	81	9297.	1418
1		0005	2	0.	.0	2183.0	1		0325	42	852.	51.5	2186.3	1		0645	82	9491.	1472
1		0010	3	2.	.0	2183.0	1		0330	43	1010.	62.7	2186.6	1		0650	83	9682.	1525
1		0015	4	8.	.2	2183.1	1		0335	44	1207.	76.6	2186.9	1		0655	84	9868.	1577
1		0020	5	21.	.5	2183.2	1		0340	45	1441.	93.1	2187.3	1		0700	85	10048.	1628
1		0025	6	41.	.9	2183.3	1		0345	46	1695.	111.1	2187.8	1		0705	86	10222.	1676
1		0030	7	66.	1.5	2183.5	1		0350	47	1944.	129.0	2188.2	1		0710	87	10388.	1722
1		0035	8	91.	2.0	2183.7	1		0355	48	2176.	146.0	2188.5	1		0715	88	10545.	1766
1		0040	9	113.	2.5	2183.9	1		0400	49	2396.	162.1	2188.8	1		0720	89	10692.	1807
1		0045	10	127.	2.8	2184.0	1		0405	50	2608.	177.6	2189.1	1		0725	90	10829.	1845
1		0050	11	129.	3.0	2184.0	1		0410	51	2811.	192.5	2189.3	1		0730	91	10955.	1881
1		0055	12	129.	3.0	2184.0	1		0415	52	3007.	206.8	2189.6	1		0735	92	11069.	1912
1		0100	13	128.	2.9	2184.0	1		0420	53	3201.	221.0	2189.9	1		0740	93	11172.	1941
1		0105	14	122.	2.7	2184.0	1		0425	54	3372.	235.9	2190.1	1		0745	94	11262.	1966
1		0110	15	113.	2.5	2183.9	1		0430	55	3522.	252.5	2190.4	1		0750	95	11341.	1988
1		0115	16	104.	2.3	2183.8	1		0435	56	3696.	271.8	2190.8	1		0755	96	11407.	2007
1		0120	17	97.	2.2	2183.8	1		0440	57	3902.	294.8	2191.2	1		0800	97	11460.	2022
1		0125	18	93.	2.1	2183.7	1		0445	58	4147.	321.9	2191.7	1		0805	98	11501.	2033

1	0130	19	92.	2.0	2183.7	*	1	0450	59	4404.	353.3	2192.2	*	1	0810	99	11529.	2041
1	0135	20	95.	2.1	2183.8	*	1	0455	60	4656.	388.8	2192.9	*	1	0815	100	11544.	2045
1	0140	21	104.	2.3	2183.8	*	1	0500	61	4934.	427.9	2193.5	*	1	0820	101	11547.	2046
	0145	22	117.	2.6	2183.9	*	1	0505	62	5213.	469.6	2194.3	*	1	0825	102	11537.	2043
	0150	23	129.	3.0	2184.0	*	1	0510	63	5470.	512.5	2195.0	*	1	0830	103	11516.	2037
1	0155	24	136.	3.5	2184.0	*	1	0515	64	5730.	555.8	2195.8	*	1	0835	104	11482.	2028
1	0200	25	145.	4.0	2184.1	*	1	0520	65	5969.	599.4	2196.5	*	1	0840	105	11438.	2016
1	0205	26	156.	4.8	2184.1	*	1	0525	66	6198.	643.3	2197.2	*	1	0845	106	11384.	2001
1	0210	27	170.	5.7	2184.2	*	1	0530	67	6431.	687.9	2198.0	*	1	0850	107	11321.	1983
1	0215	28	186.	6.7	2184.2	*	1	0535	68	6646.	733.5	2198.7	*	1	0855	108	11249.	1963
1	0220	29	203.	7.9	2184.3	*	1	0540	69	6866.	780.5	2199.5	*	1	0900	109	11169.	1940
1	0225	30	221.	9.0	2184.4	*	1	0545	70	7083.	828.7	2200.3	*	1	0905	110	11081.	1916
1	0230	31	238.	10.1	2184.4	*	1	0550	71	7292.	878.2	2201.1	*	1	0910	111	10986.	1889
1	0235	32	255.	11.3	2184.5	*	1	0555	72	7506.	928.9	2201.9	*	1	0915	112	10883.	1861
1	0240	33	275.	12.6	2184.6	*	1	0600	73	7708.	980.7	2202.7	*	1	0920	113	10773.	1830
1	0245	34	297.	14.1	2184.6	*	1	0605	74	7912.	1033.6	2203.6	*	1	0925	114	10656.	1797
1	0250	35	325.	15.9	2184.8	*	1	0610	75	8113.	1087.4	2204.4	*	1	0930	115	10532.	1763
1	0255	36	359.	18.1	2184.9	*	1	0615	76	8308.	1142.0	2205.3	*	1	0935	116	10402.	1726
1	0300	37	403.	21.0	2185.0	*	1	0620	77	8505.	1197.1	2206.1	*	1	0940	117	10265.	1688
1	0305	38	459.	24.7	2185.3	*	1	0625	78	8704.	1252.5	2207.0	*	1	0945	118	10124.	1649
1	0310	39	530.	29.3	2185.5	*	1	0630	79	8902.	1307.9	2207.8	*	1	0950	119	9978.	1608
1	0315	40	618.	35.1	2185.9	*	1	0635	80	9100.	1363.2	2208.7	*	1	0955	120	9829.	1566
						*							*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
11547.	8.33		8513.	5292.	5292.	5292.
		(INCHES)	2.062	2.119	2.119	2.119
		(AC-FT)	4221.	4337.	4337.	4337.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
2046.	8.33	1297.	793.	793.	793.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
2219.28	8.33	2207.43	2198.41	2198.41	2198.41

CUMULATIVE AREA = 38.38 SQ MI

WARNING --- ROUTED OUTFLOW (8552.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8736.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8918.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9098.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9275.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9447.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9615.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9776.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9930.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10076.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10213.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10340.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10456.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10563.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10658.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10743.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10816.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10878.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10928.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10966.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10992.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11006.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (11008.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10998.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10977.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10946.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10905.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10855.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10796.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10729.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10654.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10571.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10481.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10384.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10279.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10168.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10049.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9925.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9795.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9660.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9521.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9379.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .80

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	646.	37.0	2186.0	1		0640	81	8918.	1312
1		0005	2	0.	.0	2183.0	1		0325	42	763.	45.2	2186.2	1		0645	82	9098.	1362
1		0010	3	2.	.0	2183.0	1		0330	43	908.	55.5	2186.4	1		0650	83	9275.	1411
1		0015	4	8.	.2	2183.1	1		0335	44	1090.	68.3	2186.7	1		0655	84	9447.	1460
1		0020	5	21.	.5	2183.2	1		0340	45	1306.	83.6	2187.1	1		0700	85	9615.	1506
1		0025	6	40.	.9	2183.3	1		0345	46	1542.	100.3	2187.5	1		0705	86	9776.	1552
1		0030	7	64.	1.4	2183.5	1		0350	47	1777.	116.9	2187.9	1		0710	87	9930.	1595
1		0035	8	88.	2.0	2183.7	1		0355	48	1994.	132.7	2188.2	1		0715	88	10076.	1635
1		0040	9	109.	2.4	2183.9	1		0400	49	2200.	147.7	2188.5	1		0720	89	10213.	1673
1		0045	10	124.	2.7	2184.0	1		0405	50	2401.	162.4	2188.8	1		0725	90	10340.	1709
1		0050	11	127.	2.9	2184.0	1		0410	51	2596.	176.7	2189.0	1		0730	91	10456.	1741
1		0055	12	127.	2.9	2184.0	1		0415	52	2785.	190.6	2189.3	1		0735	92	10563.	1771
1		0100	13	124.	2.7	2184.0	1		0420	53	2971.	204.2	2189.5	1		0740	93	10658.	1798
1		0105	14	115.	2.6	2183.9	1		0425	54	3162.	218.2	2189.8	1		0745	94	10743.	1821
1		0110	15	106.	2.3	2183.8	1		0430	55	3349.	233.3	2190.1	1		0750	95	10816.	1842
1		0115	16	97.	2.2	2183.8	1		0435	56	3505.	250.6	2190.4	1		0755	96	10878.	1859
1		0120	17	90.	2.0	2183.7	1		0440	57	3690.	271.2	2190.8	1		0800	97	10928.	1873
1		0125	18	85.	1.9	2183.7	1		0445	58	3912.	295.8	2191.2	1		0805	98	10966.	1884
1		0130	19	83.	1.9	2183.7	1		0450	59	4171.	324.6	2191.7	1		0810	99	10992.	1891

1	0135	20	86.	1.9	2183.7	*	1	0455	60	4433.	357.3	2192.3	*	1	0815 100	11006.	1895
1	0140	21	93.	2.1	2183.7	*	1	0500	61	4689.	393.4	2192.9	*	1	0820 101	11008.	1895
1	0145	22	104.	2.3	2183.8	*	1	0505	62	4963.	432.0	2193.6	*	1	0825 102	10998.	1893
	0150	23	118.	2.6	2183.9	*	1	0510	63	5227.	472.0	2194.3	*	1	0830 103	10977.	1887
	0155	24	129.	3.0	2184.0	*	1	0515	64	5471.	512.6	2195.0	*	1	0835 104	10946.	1878
1	0200	25	136.	3.5	2184.0	*	1	0520	65	5716.	553.5	2195.7	*	1	0840 105	10905.	1867
1	0205	26	145.	4.0	2184.1	*	1	0525	66	5944.	594.7	2196.4	*	1	0845 106	10855.	1853
1	0210	27	156.	4.8	2184.1	*	1	0530	67	6162.	636.4	2197.1	*	1	0850 107	10796.	1836
1	0215	28	170.	5.7	2184.2	*	1	0535	68	6384.	678.9	2197.8	*	1	0855 108	10729.	1817
1	0220	29	184.	6.6	2184.2	*	1	0540	69	6594.	722.4	2198.6	*	1	0900 109	10654.	1796
1	0225	30	199.	7.6	2184.3	*	1	0545	70	6803.	767.1	2199.3	*	1	0905 110	10571.	1773
1	0230	31	213.	8.5	2184.3	*	1	0550	71	7016.	812.9	2200.0	*	1	0910 111	10481.	1748
1	0235	32	227.	9.5	2184.4	*	1	0555	72	7215.	859.9	2200.8	*	1	0915 112	10384.	1721
1	0240	33	243.	10.5	2184.4	*	1	0600	73	7418.	908.0	2201.6	*	1	0920 113	10279.	1692
1	0245	34	262.	11.8	2184.5	*	1	0605	74	7617.	956.9	2202.4	*	1	0925 114	10168.	1661
1	0250	35	286.	13.3	2184.6	*	1	0610	75	7809.	1006.7	2203.1	*	1	0930 115	10049.	1628
1	0255	36	315.	15.2	2184.7	*	1	0615	76	8003.	1057.1	2203.9	*	1	0935 116	9925.	1593
1	0300	37	353.	17.7	2184.9	*	1	0620	77	8186.	1107.9	2204.7	*	1	0940 117	9795.	1557
1	0305	38	403.	21.0	2185.0	*	1	0625	78	8369.	1159.0	2205.5	*	1	0945 118	9660.	1519
1	0310	39	466.	25.1	2185.3	*	1	0630	79	8552.	1210.2	2206.3	*	1	0950 119	9521.	1480
1	0315	40	546.	30.4	2185.6	*	1	0635	80	8736.	1261.4	2207.1	*	1	0955 120	9379.	1440
						*							*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
11008.	8.33		8127.	5045.	5045.	5045.
		(INCHES)	1.969	2.020	2.020	2.020
		(AC-FT)	4030.	4135.	4135.	4135.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
1896.	8.33	1200.	733.	733.	733.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
2216.94	8.33	2205.91	2197.45	2197.45	2197.45

CUMULATIVE AREA = 38.38 SQ MI

WARNING --- ROUTED OUTFLOW (8581.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8739.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8894.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9044.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9188.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9325.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9456.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9578.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9692.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9798.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9894.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9980.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10057.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10123.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10178.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10223.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10256.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10278.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10289.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10290.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10280.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10261.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10232.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10195.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10149.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10095.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (10034.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9965.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9889.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9805.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9714.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9616.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9511.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9400.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9284.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9162.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9036.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8906.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8773.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .76

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	540.	30.0	2185.6	1		0640	81	8420.	1173
1		0005	2	0.	.0	2183.0	1		0325	42	649.	37.2	2186.0	1		0645	82	8581.	1218
1		0010	3	2.	.0	2183.0	1		0330	43	776.	46.2	2186.2	1		0650	83	8739.	1262
1		0015	4	8.	.2	2183.1	1		0335	44	937.	57.5	2186.5	1		0655	84	8894.	1305
1		0020	5	20.	.4	2183.2	1		0340	45	1129.	71.1	2186.8	1		0700	85	9044.	1347
1		0025	6	38.	.8	2183.3	1		0345	46	1340.	86.0	2187.2	1		0705	86	9188.	1387
1		0030	7	61.	1.3	2183.5	1		0350	47	1550.	100.9	2187.5	1		0710	87	9325.	1426
1		0035	8	84.	1.9	2183.7	1		0355	48	1749.	115.0	2187.9	1		0715	88	9456.	1462
1		0040	9	104.	2.3	2183.8	1		0400	49	1937.	128.5	2188.2	1		0720	89	9578.	1496
1		0045	10	117.	2.6	2183.9	1		0405	50	2119.	141.8	2188.4	1		0725	90	9692.	1528
1		0050	11	123.	2.7	2184.0	1		0410	51	2301.	155.2	2188.6	1		0730	91	9798.	1557
1		0055	12	122.	2.7	2184.0	1		0415	52	2481.	168.3	2188.9	1		0735	92	9894.	1584
1		0100	13	116.	2.6	2183.9	1		0420	53	2658.	181.3	2189.1	1		0740	93	9980.	1609
1		0105	14	108.	2.4	2183.9	1		0425	54	2838.	194.4	2189.4	1		0745	94	10057.	1630
1		0110	15	99.	2.2	2183.8	1		0430	55	3027.	208.3	2189.6	1		0750	95	10123.	1648
1		0115	16	90.	2.0	2183.7	1		0435	56	3235.	223.5	2189.9	1		0755	96	10178.	1664
1		0120	17	82.	1.8	2183.6	1		0440	57	3419.	241.1	2190.2	1		0800	97	10223.	1676
1		0125	18	76.	1.7	2183.6	1		0445	58	3609.	262.2	2190.6	1		0805	98	10256.	1685
1		0130	19	74.	1.6	2183.6	1		0450	59	3834.	287.2	2191.0	1		0810	99	10278.	1692
1		0135	20	75.	1.7	2183.6	1		0455	60	4094.	316.0	2191.6	1		0815	100	10289.	1695
1		0140	21	79.	1.8	2183.6	1		0500	61	4367.	348.0	2192.1	1		0820	101	10290.	1695
1		0145	22	88.	2.0	2183.7	1		0505	62	4610.	382.3	2192.7	1		0825	102	10280.	1692
1		0150	23	99.	2.2	2183.8	1		0510	63	4864.	418.0	2193.4	1		0830	103	10261.	1687
1		0155	24	112.	2.5	2183.9	1		0515	64	5123.	454.6	2194.0	1		0835	104	10232.	1679
1		0200	25	126.	2.8	2184.0	1		0520	65	5345.	491.6	2194.7	1		0840	105	10195.	1668
1		0205	26	132.	3.2	2184.0	1		0525	66	5570.	529.2	2195.3	1		0845	106	10149.	1656

1	0210	27	141.	3.8	2184.1	*	1	0530	67	5798.	567.2	2196.0	*	1	0850 107	10095.	1641
1	0215	28	151.	4.4	2184.1	*	1	0535	68	6002.	605.8	2196.6	*	1	0855 108	10034.	1623
1	0220	29	161.	5.1	2184.1	*	1	0540	69	6208.	645.2	2197.3	*	1	0900 109	9965.	1604
1	0225	30	172.	5.8	2184.2	*	1	0545	70	6418.	685.4	2197.9	*	1	0905 110	9889.	1583
1	0230	31	183.	6.5	2184.2	*	1	0550	71	6612.	726.4	2198.6	*	1	0910 111	9805.	1560
1	0235	32	193.	7.2	2184.3	*	1	0555	72	6809.	768.3	2199.3	*	1	0915 112	9714.	1534
1	0240	33	205.	8.0	2184.3	*	1	0600	73	7009.	811.2	2200.0	*	1	0920 113	9616.	1507
1	0245	34	219.	8.9	2184.4	*	1	0605	74	7194.	855.0	2200.7	*	1	0925 114	9511.	1478
1	0250	35	237.	10.1	2184.4	*	1	0610	75	7382.	899.6	2201.4	*	1	0930 115	9400.	1447
1	0255	36	260.	11.6	2184.5	*	1	0615	76	7569.	944.7	2202.2	*	1	0935 116	9284.	1414
1	0300	37	291.	13.7	2184.6	*	1	0620	77	7745.	990.3	2202.9	*	1	0940 117	9162.	1380
1	0305	38	332.	16.4	2184.8	*	1	0625	78	7922.	1036.1	2203.6	*	1	0945 118	9036.	1345
1	0310	39	385.	19.8	2185.0	*	1	0630	79	8093.	1082.0	2204.3	*	1	0950 119	8906.	1308
1	0315	40	453.	24.3	2185.2	*	1	0635	80	8257.	1127.8	2205.0	*	1	0955 120	8773.	1271
						*							*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR
(CFS)	(HR)					
		(CFS)				
10290.	8.33		7605.	4712.	4712.	4712.
		(INCHES)	1.842	1.887	1.887	1.887
		(AC-FT)	3771.	3862.	3862.	3862.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR
(AC-FT)	(HR)				
1695.	8.33	1071.	654.	654.	654.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR
(FEET)	(HR)				
2213.83	8.33	2203.88	2196.16	2196.16	2196.16

CUMULATIVE AREA = 38.38 SQ MI

WARNING --- ROUTED OUTFLOW (8489.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8617.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8739.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8855.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8964.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9065.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9159.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9244.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9320.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9387.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9445.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9492.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9530.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9558.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9576.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9585.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9584.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9575.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9557.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9531.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9497.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9455.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9406.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9350.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9286.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9214.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9136.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9050.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8958.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8859.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8755.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8646.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8532.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .73

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	445.	23.7	2185.2	1		0640	81	7930.	1038
1		0005	2	0.	.0	2183.0	1		0325	42	538.	29.9	2185.6	1		0645	82	8079.	1078
1		0010	3	2.	.0	2183.0	1		0330	43	656.	37.7	2186.0	1		0650	83	8219.	1117
1		0015	4	7.	.2	2183.1	1		0335	44	796.	47.5	2186.2	1		0655	84	8356.	1155
1		0020	5	19.	.4	2183.1	1		0340	45	965.	59.5	2186.5	1		0700	85	8489.	1192
1		0025	6	36.	.8	2183.3	1		0345	46	1151.	72.6	2186.8	1		0705	86	8617.	1228
1		0030	7	57.	1.3	2183.5	1		0350	47	1336.	85.7	2187.2	1		0710	87	8739.	1262
1		0035	8	80.	1.8	2183.6	1		0355	48	1512.	98.1	2187.5	1		0715	88	8855.	1294
1		0040	9	99.	2.2	2183.8	1		0400	49	1680.	110.0	2187.8	1		0720	89	8964.	1325
1		0045	10	111.	2.5	2183.9	1		0405	50	1846.	121.9	2188.0	1		0725	90	9065.	1353
1		0050	11	117.	2.6	2183.9	1		0410	51	2010.	133.9	2188.2	1		0730	91	9159.	1379
1		0055	12	116.	2.6	2183.9	1		0415	52	2177.	146.0	2188.5	1		0735	92	9244.	1403
1		0100	13	110.	2.5	2183.9	1		0420	53	2345.	158.3	2188.7	1		0740	93	9320.	1424
1		0105	14	102.	2.3	2183.8	1		0425	54	2515.	170.8	2188.9	1		0745	94	9387.	1443
1		0110	15	93.	2.1	2183.7	1		0430	55	2692.	183.7	2189.2	1		0750	95	9445.	1459
1		0115	16	84.	1.9	2183.7	1		0435	56	2882.	197.6	2189.4	1		0755	96	9492.	1472
1		0120	17	76.	1.7	2183.6	1		0440	57	3094.	213.2	2189.7	1		0800	97	9530.	1483
1		0125	18	70.	1.6	2183.6	1		0445	58	3329.	231.1	2190.0	1		0805	98	9558.	1491
1		0130	19	66.	1.5	2183.5	1		0450	59	3519.	252.2	2190.4	1		0810	99	9576.	1496
1		0135	20	65.	1.5	2183.5	1		0455	60	3741.	276.8	2190.9	1		0815	100	9585.	1498
1		0140	21	68.	1.5	2183.5	1		0500	61	3991.	304.6	2191.4	1		0820	101	9584.	1498
1		0145	22	74.	1.7	2183.6	1		0505	62	4262.	334.6	2191.9	1		0825	102	9575.	1495
1		0150	23	83.	1.8	2183.7	1		0510	63	4494.	365.9	2192.5	1		0830	103	9557.	1490
1		0155	24	93.	2.1	2183.7	1		0515	64	4723.	398.1	2193.0	1		0835	104	9531.	1483
1		0200	25	105.	2.3	2183.8	1		0520	65	4956.	431.0	2193.6	1		0840	105	9497.	1473
1		0205	26	118.	2.6	2183.9	1		0525	66	5183.	464.6	2194.2	1		0845	106	9455.	1462
1		0210	27	129.	3.0	2184.0	1		0530	67	5388.	498.8	2194.8	1		0850	107	9406.	1448
1		0215	28	136.	3.4	2184.0	1		0535	68	5597.	533.7	2195.4	1		0855	108	9350.	1432
1		0220	29	143.	3.9	2184.1	1		0540	69	5810.	569.2	2196.0	1		0900	109	9286.	1415
1		0225	30	151.	4.4	2184.1	1		0545	70	6000.	605.5	2196.6	1		0905	110	9214.	1395
1		0230	31	158.	4.9	2184.1	1		0550	71	6193.	642.4	2197.2	1		0910	111	9136.	1373
1		0235	32	165.	5.4	2184.1	1		0555	72	6389.	679.9	2197.8	1		0915	112	9050.	1349
1		0240	33	173.	5.9	2184.2	1		0600	73	6573.	718.0	2198.5	1		0920	113	8958.	1323
1		0245	34	183.	6.5	2184.2	1		0605	74	6755.	756.8	2199.1	1		0925	114	8859.	1295
1		0250	35	196.	7.4	2184.3	1		0610	75	6939.	796.1	2199.8	1		0930	115	8755.	1266
1		0255	36	214.	8.6	2184.3	1		0615	76	7114.	836.0	2200.4	1		0935	116	8646.	1236
1		0300	37	238.	10.2	2184.4	1		0620	77	7284.	876.2	2201.1	1		0940	117	8532.	1204
1		0305	38	271.	12.3	2184.5	1		0625	78	7455.	916.7	2201.7	1		0945	118	8415.	1171
1		0310	39	314.	15.2	2184.7	1		0630	79	7618.	957.3	2202.4	1		0950	119	8294.	1138
1		0315	40	371.	18.9	2184.9	1		0635	80	7774.	997.8	2203.0	1		0955	120	8172.	1103

PEAK FLOW TIME MAXIMUM AVERAGE FLOW

6-HR 24-HR 72-HR 9.92-HR□

(CFS)	(HR)					
		(CFS)				
9585.	8.25		7082.	4380.	4380.	4380.
		(INCHES)	1.716	1.754	1.754	1.754
		(AC-FT)	3512.	3590.	3590.	3590.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR
(AC-FT)	(HR)				
1498.	8.25	945.	576.	576.	576.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR
(FEET)	(HR)				
2210.78	8.25	2201.88	2194.91	2194.91	2194.91

CUMULATIVE AREA = 38.38 SQ MI

WARNING --- ROUTED OUTFLOW (8518.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8609.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8693.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8770.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8838.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8898.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8949.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8991.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9024.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9048.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9064.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9071.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9070.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9061.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9044.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (9020.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8988.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8949.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8902.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8849.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8787.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8719.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8644.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

WARNING --- ROUTED OUTFLOW (8562.) IS GREATER THAN MAXIMUM OUTFLOW (8480.) IN STORAGE-OUTFLOW TABLE

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .69

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	381.	19.6	2185.0	1		0640	81	7558.	941
1		0005	2	0.	.0	2183.0	1		0325	42	464.	25.0	2185.3	1		0645	82	7697.	977
1		0010	3	2.	.0	2183.0	1		0330	43	569.	31.9	2185.7	1		0650	83	7833.	1013

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0015	4	7.	.2	2183.1	1		0335	44	700.	40.8	2186.1	1		0655	84	7967.	1047
1		0020	5	18.	.4	2183.1	1		0340	45	853.	51.5	2186.3	1		0700	85	8090.	1081
1		0025	6	35.	.8	2183.3	1		0345	46	1021.	63.4	2186.6	1		0705	86	8205.	1113
		0030	7	55.	1.2	2183.4	1		0350	47	1188.	75.2	2186.9	1		0710	87	8315.	1144
		0035	8	76.	1.7	2183.6	1		0355	48	1346.	86.4	2187.2	1		0715	88	8420.	1173
1		0040	9	95.	2.1	2183.8	1		0400	49	1497.	97.1	2187.4	1		0720	89	8518.	1200
1		0045	10	107.	2.4	2183.8	1		0405	50	1648.	107.8	2187.7	1		0725	90	8609.	1226
1		0050	11	112.	2.5	2183.9	1		0410	51	1801.	118.6	2188.0	1		0730	91	8693.	1249
1		0055	12	111.	2.5	2183.9	1		0415	52	1955.	129.8	2188.2	1		0735	92	8770.	1270
1		0100	13	106.	2.3	2183.8	1		0420	53	2113.	141.4	2188.4	1		0740	93	8838.	1290
1		0105	14	98.	2.2	2183.8	1		0425	54	2276.	153.3	2188.6	1		0745	94	8898.	1306
1		0110	15	89.	2.0	2183.7	1		0430	55	2446.	165.8	2188.8	1		0750	95	8949.	1320
1		0115	16	80.	1.8	2183.6	1		0435	56	2626.	178.9	2189.1	1		0755	96	8991.	1332
1		0120	17	73.	1.6	2183.6	1		0440	57	2824.	193.4	2189.3	1		0800	97	9024.	1341
1		0125	18	66.	1.5	2183.5	1		0445	58	3048.	209.8	2189.6	1		0805	98	9048.	1348
1		0130	19	62.	1.4	2183.5	1		0450	59	3304.	228.5	2190.0	1		0810	99	9064.	1353
1		0135	20	60.	1.3	2183.5	1		0455	60	3500.	250.1	2190.4	1		0815	100	9071.	1354
1		0140	21	62.	1.4	2183.5	1		0500	61	3720.	274.5	2190.8	1		0820	101	9070.	1354
1		0145	22	66.	1.5	2183.5	1		0505	62	3961.	301.3	2191.3	1		0825	102	9061.	1352
1		0150	23	73.	1.6	2183.6	1		0510	63	4214.	329.4	2191.8	1		0830	103	9044.	1347
1		0155	24	81.	1.8	2183.6	1		0515	64	4439.	358.2	2192.3	1		0835	104	9020.	1340
1		0200	25	91.	2.0	2183.7	1		0520	65	4649.	387.8	2192.8	1		0840	105	8988.	1331
1		0205	26	102.	2.3	2183.8	1		0525	66	4864.	418.1	2193.4	1		0845	106	8949.	1320
1		0210	27	115.	2.6	2183.9	1		0530	67	5085.	449.2	2193.9	1		0850	107	8902.	1307
1		0215	28	127.	2.9	2184.0	1		0535	68	5282.	481.1	2194.5	1		0855	108	8849.	1292
1		0220	29	133.	3.2	2184.0	1		0540	69	5478.	513.9	2195.0	1		0900	109	8787.	1275
1		0225	30	138.	3.6	2184.0	1		0545	70	5679.	547.3	2195.6	1		0905	110	8719.	1256
1		0230	31	143.	3.9	2184.1	1		0550	71	5874.	581.2	2196.2	1		0910	111	8644.	1235
1		0235	32	147.	4.2	2184.1	1		0555	72	6054.	615.8	2196.8	1		0915	112	8562.	1212
1		0240	33	153.	4.6	2184.1	1		0600	73	6238.	650.9	2197.4	1		0920	113	8474.	1188
1		0245	34	160.	5.0	2184.1	1		0605	74	6424.	686.5	2198.0	1		0925	114	8380.	1162
1		0250	35	170.	5.7	2184.2	1		0610	75	6593.	722.4	2198.6	1		0930	115	8281.	1134
1		0255	36	184.	6.6	2184.2	1		0615	76	6763.	758.7	2199.2	1		0935	116	8177.	1105
1		0300	37	204.	7.9	2184.3	1		0620	77	6935.	795.2	2199.8	1		0940	117	8069.	1075
1		0305	38	231.	9.7	2184.4	1		0625	78	7096.	831.9	2200.4	1		0945	118	7954.	1044
1		0310	39	268.	12.1	2184.5	1		0630	79	7252.	868.6	2200.9	1		0950	119	7831.	1012
1		0315	40	317.	15.4	2184.7	1		0635	80	7407.	905.3	2201.5	1		0955	120	7707.	980

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR
(CFS)	(HR)					
		(CFS)				
9071.	8.25		6693.	4134.	4134.	4134.
		(INCHES)	1.621	1.655	1.655	1.655
		(AC-FT)	3319.	3388.	3388.	3388.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR
(AC-FT)	(HR)				
1355.	8.25	853.	520.	520.	520.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR
(FEET)	(HR)				
2208.56	8.25	2200.42	2193.99	2193.99	2193.99

CUMULATIVE AREA = 38.38 SQ MI

HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .64

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	1		0320	41	284.	13.2	2184.6	1		0640	81	6841.	775
1		0005	2	0.	.0	2183.0	1		0325	42	348.	17.4	2184.8	1		0645	82	6979.	804
1		0010	3	2.	.0	2183.0	1		0330	43	432.	22.9	2185.2	1		0650	83	7103.	833
1		0015	4	6.	.1	2183.1	1		0335	44	540.	30.0	2185.6	1		0655	84	7222.	861
1		0020	5	16.	.4	2183.1	1		0340	45	671.	38.7	2186.0	1		0700	85	7337.	888
1		0025	6	32.	.7	2183.3	1		0345	46	808.	48.4	2186.3	1		0705	86	7447.	914
1		0030	7	51.	1.1	2183.4	1		0350	47	943.	58.0	2186.5	1		0710	87	7551.	939
1		0035	8	70.	1.6	2183.6	1		0355	48	1071.	67.0	2186.7	1		0715	88	7642.	963
1		0040	9	87.	1.9	2183.7	1		0400	49	1193.	75.6	2186.9	1		0720	89	7727.	985

1	0045	10	98.	2.2	2183.8	*	1	0405	50	1314.	84.2	2187.1	*	1	0725	90	7807.	1006
1	0050	11	103.	2.3	2183.8	*	1	0410	51	1438.	92.9	2187.3	*	1	0730	91	7879.	1025
1	0055	12	102.	2.3	2183.8	*	1	0415	52	1567.	102.1	2187.6	*	1	0735	92	7944.	1041
1	0100	13	97.	2.2	2183.8	*	1	0420	53	1704.	111.8	2187.8	*	1	0740	93	8002.	1056
1	0105	14	90.	2.0	2183.7	*	1	0425	54	1851.	122.2	2188.0	*	1	0745	94	8049.	1069
1	0110	15	82.	1.8	2183.7	*	1	0430	55	2006.	133.5	2188.2	*	1	0750	95	8089.	1080
1	0115	16	74.	1.6	2183.6	*	1	0435	56	2172.	145.7	2188.5	*	1	0755	96	8121.	1089
1	0120	17	67.	1.5	2183.5	*	1	0440	57	2351.	158.8	2188.7	*	1	0800	97	8147.	1097
1	0125	18	61.	1.3	2183.5	*	1	0445	58	2547.	173.1	2189.0	*	1	0805	98	8165.	1102
1	0130	19	56.	1.2	2183.4	*	1	0450	59	2764.	189.0	2189.3	*	1	0810	99	8177.	1105
1	0135	20	54.	1.2	2183.4	*	1	0455	60	3004.	206.6	2189.6	*	1	0815	100	8182.	1106
1	0140	21	53.	1.2	2183.4	*	1	0500	61	3265.	225.7	2189.9	*	1	0820	101	8179.	1106
1	0145	22	55.	1.2	2183.4	*	1	0505	62	3465.	246.2	2190.3	*	1	0825	102	8170.	1103
1	0150	23	59.	1.3	2183.5	*	1	0510	63	3662.	268.0	2190.7	*	1	0830	103	8153.	1098
1	0155	24	64.	1.4	2183.5	*	1	0515	64	3868.	290.9	2191.1	*	1	0835	104	8130.	1092
1	0200	25	70.	1.5	2183.6	*	1	0520	65	4081.	314.6	2191.5	*	1	0840	105	8100.	1083
1	0205	26	77.	1.7	2183.6	*	1	0525	66	4300.	338.9	2192.0	*	1	0845	106	8062.	1073
1	0210	27	87.	1.9	2183.7	*	1	0530	67	4480.	363.9	2192.4	*	1	0850	107	8018.	1060
1	0215	28	97.	2.2	2183.8	*	1	0535	68	4664.	389.9	2192.9	*	1	0855	108	7962.	1046
1	0220	29	107.	2.4	2183.8	*	1	0540	69	4855.	416.8	2193.3	*	1	0900	109	7900.	1030
1	0225	30	114.	2.5	2183.9	*	1	0545	70	5052.	444.5	2193.8	*	1	0905	110	7831.	1012
1	0230	31	119.	2.7	2183.9	*	1	0550	71	5232.	472.9	2194.3	*	1	0910	111	7756.	993
1	0235	32	123.	2.7	2184.0	*	1	0555	72	5407.	502.0	2194.8	*	1	0915	112	7675.	972
1	0240	33	127.	2.8	2184.0	*	1	0600	73	5585.	531.7	2195.3	*	1	0920	113	7588.	949
1	0245	34	129.	3.0	2184.0	*	1	0605	74	5766.	561.8	2195.9	*	1	0925	114	7494.	925
1	0250	35	134.	3.3	2184.0	*	1	0610	75	5931.	592.3	2196.4	*	1	0930	115	7388.	900
1	0255	36	142.	3.9	2184.1	*	1	0615	76	6092.	622.9	2196.9	*	1	0935	116	7279.	875
1	0300	37	154.	4.7	2184.1	*	1	0620	77	6252.	653.7	2197.4	*	1	0940	117	7167.	848
1	0305	38	173.	5.9	2184.2	*	1	0625	78	6413.	684.4	2197.9	*	1	0945	118	7052.	821
1	0310	39	199.	7.6	2184.3	*	1	0630	79	6558.	714.9	2198.4	*	1	0950	119	6927.	793
1	0315	40	236.	10.0	2184.4	*	1	0635	80	6700.	745.2	2198.9	*	1	0955	120	6796.	765

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR
(CFS)	(HR)					
		(CFS)				
8182.	8.25		5982.	3687.	3687.	3687.
		(INCHES)	1.449	1.476	1.476	1.476
		(AC-FT)	2966.	3022.	3022.	3022.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR
(AC-FT)	(HR)				
1107.	8.25	693.	423.	423.	423.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR
(FEET)	(HR)				
2204.71	8.25	2197.86	2192.38	2192.38	2192.38

CUMULATIVE AREA = 38.38 SQ MI

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .58

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	2183.0	*	1		0320	41	208.	8.2	2184.3	*	1		0640	81	5994.	604
1		0005	2	0.	.0	2183.0	*	1		0325	42	254.	11.2	2184.5	*	1		0645	82	6119.	628
1		0010	3	2.	.0	2183.0	*	1		0330	43	316.	15.3	2184.7	*	1		0650	83	6241.	651
1		0015	4	6.	.1	2183.0	*	1		0335	44	397.	20.6	2185.0	*	1		0655	84	6360.	674
1		0020	5	15.	.3	2183.1	*	1		0340	45	500.	27.4	2185.4	*	1		0700	85	6470.	696
1		0025	6	29.	.6	2183.2	*	1		0345	46	613.	34.8	2185.8	*	1		0705	86	6568.	716
1		0030	7	46.	1.0	2183.4	*	1		0350	47	720.	42.2	2186.1	*	1		0710	87	6660.	736
1		0035	8	64.	1.4	2183.5	*	1		0355	48	817.	49.1	2186.3	*	1		0715	88	6748.	755
1		0040	9	79.	1.8	2183.6	*	1		0400	49	910.	55.6	2186.4	*	1		0720	89	6829.	772
1		0045	10	89.	2.0	2183.7	*	1		0405	50	1001.	62.0	2186.6	*	1		0725	90	6903.	788
1		0050	11	93.	2.1	2183.7	*	1		0410	51	1094.	68.6	2186.8	*	1		0730	91	6971.	802
1		0055	12	93.	2.1	2183.7	*	1		0415	52	1192.	75.5	2186.9	*	1		0735	92	7029.	815
1		0100	13	88.	2.0	2183.7	*	1		0420	53	1296.	82.9	2187.1	*	1		0740	93	7077.	827
1		0105	14	82.	1.8	2183.6	*	1		0425	54	1411.	91.1	2187.3	*	1		0745	94	7119.	837
1		0110	15	74.	1.7	2183.6	*	1		0430	55	1541.	100.2	2187.5	*	1		0750	95	7154.	845

1	0115	16	67.	1.5	2183.5	*	1	0435	56	1688.	110.6	2187.8	*	1	0755	96	7182.	852
1	0120	17	60.	1.3	2183.5	*	1	0440	57	1851.	122.2	2188.0	*	1	0800	97	7204.	857
1	0125	18	55.	1.2	2183.4	*	1	0445	58	2027.	135.1	2188.3	*	1	0805	98	7218.	860
1	0130	19	51.	1.1	2183.4	*	1	0450	59	2217.	149.0	2188.5	*	1	0810	99	7226.	862
1	0135	20	48.	1.1	2183.4	*	1	0455	60	2421.	163.9	2188.8	*	1	0815	100	7225.	862
1	0140	21	47.	1.1	2183.4	*	1	0500	61	2635.	179.6	2189.1	*	1	0820	101	7218.	860
1	0145	22	48.	1.1	2183.4	*	1	0505	62	2856.	195.8	2189.4	*	1	0825	102	7203.	857
1	0150	23	49.	1.1	2183.4	*	1	0510	63	3079.	212.1	2189.7	*	1	0830	103	7181.	851
1	0155	24	52.	1.1	2183.4	*	1	0515	64	3302.	228.4	2190.0	*	1	0835	104	7151.	844
1	0200	25	54.	1.2	2183.4	*	1	0520	65	3455.	245.1	2190.3	*	1	0840	105	7115.	836
1	0205	26	58.	1.3	2183.5	*	1	0525	66	3613.	262.6	2190.6	*	1	0845	106	7071.	825
1	0210	27	64.	1.4	2183.5	*	1	0530	67	3780.	281.2	2190.9	*	1	0850	107	7021.	814
1	0215	28	70.	1.6	2183.6	*	1	0535	68	3956.	300.8	2191.3	*	1	0855	108	6960.	800
1	0220	29	76.	1.7	2183.6	*	1	0540	69	4141.	321.2	2191.7	*	1	0900	109	6891.	785
1	0225	30	80.	1.8	2183.6	*	1	0545	70	4327.	342.4	2192.0	*	1	0905	110	6815.	769
1	0230	31	83.	1.8	2183.7	*	1	0550	71	4482.	364.3	2192.4	*	1	0910	111	6733.	752
1	0235	32	84.	1.9	2183.7	*	1	0555	72	4643.	386.9	2192.8	*	1	0915	112	6646.	733
1	0240	33	86.	1.9	2183.7	*	1	0600	73	4807.	410.1	2193.2	*	1	0920	113	6554.	714
1	0245	34	89.	2.0	2183.7	*	1	0605	74	4975.	433.7	2193.6	*	1	0925	114	6458.	693
1	0250	35	95.	2.1	2183.8	*	1	0610	75	5141.	457.7	2194.1	*	1	0930	115	6350.	672
1	0255	36	106.	2.4	2183.8	*	1	0615	76	5287.	482.0	2194.5	*	1	0935	116	6237.	650
1	0300	37	124.	2.7	2184.0	*	1	0620	77	5434.	506.5	2194.9	*	1	0940	117	6121.	628
1	0305	38	135.	3.4	2184.0	*	1	0625	78	5581.	531.1	2195.3	*	1	0945	118	6003.	605
1	0310	39	151.	4.5	2184.1	*	1	0630	79	5729.	555.6	2195.8	*	1	0950	119	5883.	582
1	0315	40	175.	6.0	2184.2	*	1	0635	80	5868.	580.1	2196.2	*	1	0955	120	5754.	559
						*							*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
7226.	8.17		5180.	3186.	3186.	3186.
		(INCHES)	1.255	1.276	1.276	1.276
		(AC-FT)	2568.	2611.	2611.	2611.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
862.	8.17	535.	326.	326.	326.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
2200.85	8.17	2195.25	2190.73	2190.73	2190.73

CUMULATIVE AREA = 38.38 SQ MI

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HYDROGRAPH AT STATION LDCDB
PLAN 1, RATIO = .53

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORA
							*								*						
1		0000	1	0.	.0	2183.0	*	1		0320	41	165.	5.3	2184.1	*	1		0640	81	5215.	470
1		0005	2	0.	.0	2183.0	*	1		0325	42	197.	7.5	2184.3	*	1		0645	82	5326.	488
1		0010	3	1.	.0	2183.0	*	1		0330	43	243.	10.5	2184.4	*	1		0650	83	5435.	506
1		0015	4	5.	.1	2183.0	*	1		0335	44	305.	14.6	2184.7	*	1		0655	84	5541.	524
1		0020	5	14.	.3	2183.1	*	1		0340	45	384.	19.8	2185.0	*	1		0700	85	5643.	541
1		0025	6	26.	.6	2183.2	*	1		0345	46	473.	25.6	2185.3	*	1		0705	86	5741.	557
1		0030	7	42.	.9	2183.3	*	1		0350	47	560.	31.3	2185.6	*	1		0710	87	5831.	573
1		0035	8	58.	1.3	2183.5	*	1		0355	48	641.	36.6	2185.9	*	1		0715	88	5907.	587
1		0040	9	72.	1.6	2183.6	*	1		0400	49	712.	41.6	2186.1	*	1		0720	89	5977.	601
1		0045	10	81.	1.8	2183.6	*	1		0405	50	781.	46.4	2186.2	*	1		0725	90	6042.	613
1		0050	11	85.	1.9	2183.7	*	1		0410	51	851.	51.4	2186.3	*	1		0730	91	6102.	624
1		0055	12	85.	1.9	2183.7	*	1		0415	52	924.	56.6	2186.5	*	1		0735	92	6155.	635
1		0100	13	81.	1.8	2183.6	*	1		0420	53	1003.	62.2	2186.6	*	1		0740	93	6201.	643
1		0105	14	75.	1.7	2183.6	*	1		0425	54	1091.	68.4	2186.7	*	1		0745	94	6240.	651
1		0110	15	68.	1.5	2183.5	*	1		0430	55	1191.	75.5	2186.9	*	1		0750	95	6273.	657
1		0115	16	61.	1.4	2183.5	*	1		0435	56	1308.	83.7	2187.1	*	1		0755	96	6297.	662
1		0120	17	55.	1.2	2183.4	*	1		0440	57	1443.	93.3	2187.3	*	1		0800	97	6315.	665
1		0125	18	50.	1.1	2183.4	*	1		0445	58	1599.	104.3	2187.6	*	1		0805	98	6324.	667
1		0130	19	46.	1.0	2183.4	*	1		0450	59	1772.	116.6	2187.9	*	1		0810	99	6326.	667
1		0135	20	44.	1.0	2183.3	*	1		0455	60	1955.	129.8	2188.2	*	1		0815	100	6321.	666
1		0140	21	43.	1.0	2183.3	*	1		0500	61	2143.	143.6	2188.4	*	1		0820	101	6308.	664

1	0145	22	44.	1.0	2183.3	*	1	0505	62	2331.	157.4	2188.7	*	1	0825	102	6287.	660
1	0150	23	45.	1.0	2183.4	*	1	0510	63	2517.	170.9	2188.9	*	1	0830	103	6259.	655
1	0155	24	46.	1.0	2183.4	*	1	0515	64	2698.	184.2	2189.2	*	1	0835	104	6224.	648
1	0200	25	47.	1.1	2183.4	*	1	0520	65	2877.	197.3	2189.4	*	1	0840	105	6182.	640
1	0205	26	49.	1.1	2183.4	*	1	0525	66	3056.	210.4	2189.7	*	1	0845	106	6133.	630
1	0210	27	52.	1.1	2183.4	*	1	0530	67	3239.	223.8	2189.9	*	1	0850	107	6078.	620
1	0215	28	55.	1.2	2183.4	*	1	0535	68	3388.	237.6	2190.2	*	1	0855	108	6016.	608
1	0220	29	58.	1.3	2183.5	*	1	0540	69	3520.	252.3	2190.4	*	1	0900	109	5948.	595
1	0225	30	60.	1.3	2183.5	*	1	0545	70	3661.	267.9	2190.7	*	1	0905	110	5875.	581
1	0230	31	61.	1.3	2183.5	*	1	0550	71	3810.	284.5	2191.0	*	1	0910	111	5794.	566
1	0235	32	61.	1.3	2183.5	*	1	0555	72	3965.	301.7	2191.3	*	1	0915	112	5700.	550
1	0240	33	61.	1.3	2183.5	*	1	0600	73	4126.	319.6	2191.6	*	1	0920	113	5602.	534
1	0245	34	62.	1.4	2183.5	*	1	0605	74	4290.	337.7	2192.0	*	1	0925	114	5502.	517
1	0250	35	65.	1.4	2183.5	*	1	0610	75	4425.	356.3	2192.3	*	1	0930	115	5399.	500
1	0255	36	71.	1.6	2183.6	*	1	0615	76	4559.	375.1	2192.6	*	1	0935	116	5292.	482
1	0300	37	83.	1.8	2183.7	*	1	0620	77	4694.	394.1	2193.0	*	1	0940	117	5184.	464
1	0305	38	101.	2.3	2183.8	*	1	0625	78	4830.	413.2	2193.3	*	1	0945	118	5065.	446
1	0310	39	127.	2.9	2184.0	*	1	0630	79	4965.	432.3	2193.6	*	1	0950	119	4934.	427
1	0315	40	142.	3.8	2184.1	*	1	0635	80	5100.	451.2	2194.0	*	1	0955	120	4803.	409
						*							*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
6326.	8.17		4452.	2735.	2735.	2735.
		(INCHES)	1.079	1.095	1.095	1.095
		(AC-FT)	2208.	2241.	2241.	2241.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
668.	8.17	412.	251.	251.	251.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
2197.64	8.17	2193.15	2189.41	2189.41	2189.41

CUMULATIVE AREA = 38.38 SQ MI

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872 KK      **************
            *            *
            *      MCDB  *
            *            *
            **************

879 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

875 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC     -1.00  INITIAL CONDITION
                          X       .00 WORKING R AND D COEFFICIENT

876 SV            STORAGE         .0      8.0     40.0     70.0    100.0    160.0    210.0    500.0

877 SQ          DISCHARGE         0.      30.      40.      55.      65.      80.      85.      87.

878 SE          ELEVATION       .00     2.00     4.00     6.00     8.00    12.00    15.00    16.00

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .83

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	1		0320	41	38.	32.1	3.5	1		0640	81	76.	142
1		0005	2	0.	.0	.0	1		0325	42	39.	38.2	3.9	1		0645	82	75.	141
1		0010	3	0.	.0	.0	1		0330	43	43.	45.8	4.4	1		0650	83	75.	141
1		0015	4	0.	.0	.0	1		0335	44	48.	55.1	5.0	1		0655	84	75.	140
1		0020	5	0.	.0	.0	1		0340	45	53.	65.2	5.7	1		0700	85	75.	140
1		0025	6	0.	.1	.0	1		0345	46	57.	74.6	6.3	1		0705	86	75.	139
1		0030	7	1.	.2	.1	1		0350	47	59.	82.4	6.8	1		0710	87	75.	139
1		0035	8	2.	.5	.1	1		0355	48	61.	88.8	7.3	1		0715	88	75.	138
1		0040	9	3.	.9	.2	1		0400	49	63.	94.2	7.6	1		0720	89	75.	138
1		0045	10	5.	1.3	.3	1		0405	50	65.	98.7	7.9	1		0725	90	74.	137
1		0050	11	6.	1.7	.4	1		0410	51	66.	102.4	8.2	1		0730	91	74.	137
1		0055	12	8.	2.1	.5	1		0415	52	66.	105.2	8.3	1		0735	92	74.	136
1		0100	13	9.	2.4	.6	1		0420	53	67.	107.4	8.5	1		0740	93	74.	136
1		0105	14	10.	2.7	.7	1		0425	54	67.	109.3	8.6	1		0745	94	74.	135
1		0110	15	11.	3.0	.8	1		0430	55	68.	111.2	8.7	1		0750	95	74.	135
1		0115	16	12.	3.3	.8	1		0435	56	68.	113.3	8.9	1		0755	96	74.	134
1		0120	17	13.	3.5	.9	1		0440	57	69.	116.1	9.1	1		0800	97	74.	134
1		0125	18	14.	3.8	1.0	1		0445	58	70.	119.7	9.3	1		0805	98	73.	133
1		0130	19	16.	4.2	1.1	1		0450	59	71.	124.0	9.6	1		0810	99	73.	133
1		0135	20	18.	4.8	1.2	1		0455	60	72.	128.8	9.9	1		0815	100	73.	132
1		0140	21	20.	5.4	1.4	1		0500	61	73.	133.5	10.2	1		0820	101	73.	132
1		0145	22	23.	6.2	1.6	1		0505	62	74.	137.6	10.5	1		0825	102	73.	131
1		0150	23	26.	7.0	1.8	1		0510	63	75.	140.6	10.7	1		0830	103	73.	131
1		0155	24	30.	7.9	2.0	1		0515	64	76.	142.7	10.8	1		0835	104	73.	130
1		0200	25	30.	8.8	2.0	1		0520	65	76.	144.1	10.9	1		0840	105	73.	130
1		0205	26	31.	9.7	2.1	1		0525	66	76.	144.9	11.0	1		0845	106	72.	129
1		0210	27	31.	10.8	2.2	1		0530	67	76.	145.4	11.0	1		0850	107	72.	129
1		0215	28	31.	11.9	2.2	1		0535	68	76.	145.7	11.0	1		0855	108	72.	128
1		0220	29	32.	12.8	2.3	1		0540	69	76.	145.8	11.1	1		0900	109	72.	128
1		0225	30	32.	13.6	2.3	1		0545	70	76.	145.8	11.1	1		0905	110	72.	127
1		0230	31	32.	14.1	2.4	1		0550	71	76.	145.7	11.0	1		0910	111	72.	127
1		0235	32	32.	14.6	2.4	1		0555	72	76.	145.6	11.0	1		0915	112	72.	126
1		0240	33	32.	15.0	2.4	1		0600	73	76.	145.4	11.0	1		0920	113	72.	126
1		0245	34	32.	15.6	2.5	1		0605	74	76.	145.2	11.0	1		0925	114	71.	125
1		0250	35	33.	16.2	2.5	1		0610	75	76.	145.0	11.0	1		0930	115	71.	125
1		0255	36	33.	17.2	2.6	1		0615	76	76.	144.6	11.0	1		0935	116	71.	124
1		0300	37	33.	18.7	2.7	1		0620	77	76.	144.3	11.0	1		0940	117	71.	124
1		0305	38	34.	20.8	2.8	1		0625	78	76.	143.8	10.9	1		0945	118	71.	123
1		0310	39	35.	23.6	3.0	1		0630	79	76.	143.4	10.9	1		0950	119	71.	123
1		0315	40	36.	27.4	3.2	1		0635	80	76.	142.9	10.9	1		0955	120	71.	122

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR
(CFS)	(HR)					
		(CFS)				
76.	5.67		73.	53.	53.	53.
		(INCHES)	.242	.293	.293	.293
		(AC-FT)	36.	44.	44.	44.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR
(AC-FT)	(HR)				
146.	5.67	132.	86.	86.	86.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR
(FEET)	(HR)				
11.05	5.67	10.12	6.91	6.91	6.91

CUMULATIVE AREA = 2.80 SQ MI

HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .80

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	1		0320	41	37.	29.7	3.4	1		0640	81	74.	134

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE
1		0005	2	0.	.0	.0 *	1		0325	42	39.	35.5	3.7 *	1		0645	82	74.	134
1		0010	3	0.	.0	.0 *	1		0330	43	41.	42.7	4.2 *	1		0650	83	73.	133
1		0015	4	0.	.0	.0 *	1		0335	44	46.	51.6	4.8 *	1		0655	84	73.	133
1		0020	5	0.	.0	.0 *	1		0340	45	51.	61.2	5.4 *	1		0700	85	73.	132
1		0025	6	0.	.0	.0 *	1		0345	46	55.	70.2	6.0 *	1		0705	86	73.	132
1		0030	7	1.	.2	.0 *	1		0350	47	58.	77.7	6.5 *	1		0710	87	73.	131
1		0035	8	2.	.4	.1 *	1		0355	48	60.	83.8	6.9 *	1		0715	88	73.	131
1		0040	9	3.	.7	.2 *	1		0400	49	61.	88.9	7.3 *	1		0720	89	73.	130
1		0045	10	4.	1.1	.3 *	1		0405	50	63.	93.2	7.5 *	1		0725	90	73.	130
1		0050	11	6.	1.5	.4 *	1		0410	51	64.	96.7	7.8 *	1		0730	91	72.	129
1		0055	12	7.	1.8	.5 *	1		0415	52	65.	99.4	8.0 *	1		0735	92	72.	129
1		0100	13	8.	2.1	.5 *	1		0420	53	65.	101.5	8.1 *	1		0740	93	72.	128
1		0105	14	9.	2.4	.6 *	1		0425	54	66.	103.3	8.2 *	1		0745	94	72.	128
1		0110	15	10.	2.6	.7 *	1		0430	55	66.	105.1	8.3 *	1		0750	95	72.	127
1		0115	16	11.	2.9	.7 *	1		0435	56	67.	107.1	8.5 *	1		0755	96	72.	127
1		0120	17	12.	3.1	.8 *	1		0440	57	67.	109.8	8.7 *	1		0800	97	72.	126
1		0125	18	13.	3.4	.9 *	1		0445	58	68.	113.2	8.9 *	1		0805	98	72.	126
1		0130	19	14.	3.8	.9 *	1		0450	59	69.	117.4	9.2 *	1		0810	99	71.	125
1		0135	20	16.	4.3	1.1 *	1		0455	60	70.	122.0	9.5 *	1		0815	100	71.	125
1		0140	21	18.	4.9	1.2 *	1		0500	61	72.	126.5	9.8 *	1		0820	101	71.	124
1		0145	22	21.	5.6	1.4 *	1		0505	62	73.	130.4	10.0 *	1		0825	102	71.	124
1		0150	23	24.	6.3	1.6 *	1		0510	63	73.	133.3	10.2 *	1		0830	103	71.	123
1		0155	24	27.	7.1	1.8 *	1		0515	64	74.	135.3	10.4 *	1		0835	104	71.	123
1		0200	25	30.	7.9	2.0 *	1		0520	65	74.	136.6	10.4 *	1		0840	105	71.	122
1		0205	26	30.	8.8	2.1 *	1		0525	66	74.	137.4	10.5 *	1		0845	106	71.	122
1		0210	27	31.	9.8	2.1 *	1		0530	67	74.	137.8	10.5 *	1		0850	107	70.	121
1		0215	28	31.	10.8	2.2 *	1		0535	68	75.	138.1	10.5 *	1		0855	108	70.	121
1		0220	29	31.	11.7	2.2 *	1		0540	69	75.	138.2	10.5 *	1		0900	109	70.	121
1		0225	30	31.	12.4	2.3 *	1		0545	70	75.	138.2	10.5 *	1		0905	110	70.	120
1		0230	31	32.	12.9	2.3 *	1		0550	71	75.	138.1	10.5 *	1		0910	111	70.	120
1		0235	32	32.	13.3	2.3 *	1		0555	72	74.	137.9	10.5 *	1		0915	112	70.	119
1		0240	33	32.	13.7	2.4 *	1		0600	73	74.	137.8	10.5 *	1		0920	113	70.	119
1		0245	34	32.	14.1	2.4 *	1		0605	74	74.	137.6	10.5 *	1		0925	114	70.	118
1		0250	35	32.	14.8	2.4 *	1		0610	75	74.	137.3	10.5 *	1		0930	115	70.	118
1		0255	36	32.	15.7	2.5 *	1		0615	76	74.	137.0	10.5 *	1		0935	116	69.	117
1		0300	37	33.	17.1	2.6 *	1		0620	77	74.	136.6	10.4 *	1		0940	117	69.	117
1		0305	38	33.	19.0	2.7 *	1		0625	78	74.	136.2	10.4 *	1		0945	118	69.	116
1		0310	39	34.	21.7	2.9 *	1		0630	79	74.	135.8	10.4 *	1		0950	119	69.	116
1		0315	40	35.	25.2	3.1 *	1		0635	80	74.	135.3	10.4 *	1		0955	120	69.	115

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
75.	5.67		71.	52.	52.	52.
		(INCHES)	.236	.285	.285	.285
		(AC-FT)	35.	43.	43.	43.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
138.	5.67	125.	81.	81.	81.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
10.55	5.67	9.64	6.58	6.58	6.58

CUMULATIVE AREA = 2.80 SQ MI

HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .76

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0 *	1		0320	41	36.	26.5	3.2 *	1		0640	81	71.	124
1		0005	2	0.	.0	.0 *	1		0325	42	37.	31.8	3.5 *	1		0645	82	71.	123
1		0010	3	0.	.0	.0 *	1		0330	43	40.	38.5	3.9 *	1		0650	83	71.	123
1		0015	4	0.	.0	.0 *	1		0335	44	43.	46.8	4.5 *	1		0655	84	71.	122
1		0020	5	0.	.0	.0 *	1		0340	45	48.	55.8	5.1 *	1		0700	85	71.	122
1		0025	6	0.	.0	.0 *	1		0345	46	52.	64.2	5.6 *	1		0705	86	70.	122
1		0030	7	0.	.1	.0 *	1		0350	47	55.	71.2	6.1 *	1		0710	87	70.	121

1	0035	8	1.	.3	.1 *	1	0355	48	57.	76.9	6.5 *	1	0715	88	70.	121
1	0040	9	2.	.6	.1 *	1	0400	49	59.	81.7	6.8 *	1	0720	89	70.	120
1	0045	10	3.	.9	.2 *	1	0405	50	60.	85.8	7.1 *	1	0725	90	70.	120
1	0050	11	4.	1.2	.3 *	1	0410	51	61.	89.0	7.3 *	1	0730	91	70.	119
1	0055	12	6.	1.5	.4 *	1	0415	52	62.	91.5	7.4 *	1	0735	92	70.	119
1	0100	13	7.	1.7	.4 *	1	0420	53	63.	93.5	7.6 *	1	0740	93	70.	118
1	0105	14	7.	2.0	.5 *	1	0425	54	63.	95.2	7.7 *	1	0745	94	70.	118
1	0110	15	8.	2.2	.6 *	1	0430	55	64.	96.8	7.8 *	1	0750	95	69.	117
1	0115	16	9.	2.4	.6 *	1	0435	56	65.	98.7	7.9 *	1	0755	96	69.	117
1	0120	17	10.	2.6	.7 *	1	0440	57	65.	101.2	8.1 *	1	0800	97	69.	116
1	0125	18	11.	2.9	.7 *	1	0445	58	66.	104.4	8.3 *	1	0805	98	69.	116
1	0130	19	12.	3.2	.8 *	1	0450	59	67.	108.3	8.6 *	1	0810	99	69.	115
1	0135	20	14.	3.6	.9 *	1	0455	60	68.	112.6	8.8 *	1	0815	100	69.	115
1	0140	21	16.	4.2	1.0 *	1	0500	61	69.	116.8	9.1 *	1	0820	101	69.	114
1	0145	22	18.	4.8	1.2 *	1	0505	62	70.	120.5	9.4 *	1	0825	102	69.	114
1	0150	23	20.	5.5	1.4 *	1	0510	63	71.	123.2	9.5 *	1	0830	103	68.	113
1	0155	24	23.	6.2	1.5 *	1	0515	64	71.	125.1	9.7 *	1	0835	104	68.	113
1	0200	25	26.	6.9	1.7 *	1	0520	65	72.	126.3	9.8 *	1	0840	105	68.	112
1	0205	26	29.	7.7	1.9 *	1	0525	66	72.	127.0	9.8 *	1	0845	106	68.	112
1	0210	27	30.	8.6	2.0 *	1	0530	67	72.	127.4	9.8 *	1	0850	107	68.	111
1	0215	28	30.	9.4	2.1 *	1	0535	68	72.	127.6	9.8 *	1	0855	108	68.	111
1	0220	29	31.	10.2	2.1 *	1	0540	69	72.	127.7	9.8 *	1	0900	109	68.	111
1	0225	30	31.	10.8	2.2 *	1	0545	70	72.	127.7	9.8 *	1	0905	110	68.	110
1	0230	31	31.	11.2	2.2 *	1	0550	71	72.	127.5	9.8 *	1	0910	111	68.	110
1	0235	32	31.	11.5	2.2 *	1	0555	72	72.	127.4	9.8 *	1	0915	112	67.	109
1	0240	33	31.	11.9	2.2 *	1	0600	73	72.	127.2	9.8 *	1	0920	113	67.	109
1	0245	34	31.	12.3	2.3 *	1	0605	74	72.	127.0	9.8 *	1	0925	114	67.	108
1	0250	35	32.	12.8	2.3 *	1	0610	75	72.	126.8	9.8 *	1	0930	115	67.	108
1	0255	36	32.	13.6	2.4 *	1	0615	76	72.	126.5	9.8 *	1	0935	116	67.	107
1	0300	37	32.	14.9	2.4 *	1	0620	77	72.	126.1	9.7 *	1	0940	117	67.	107
1	0305	38	33.	16.7	2.5 *	1	0625	78	71.	125.7	9.7 *	1	0945	118	67.	106
1	0310	39	33.	19.1	2.7 *	1	0630	79	71.	125.3	9.7 *	1	0950	119	67.	106
1	0315	40	34.	22.3	2.9 *	1	0635	80	71.	124.8	9.7 *	1	0955	120	66.	105

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
72.	5.67		69.	50.	50.	50.
		(INCHES)	.227	.274	.274	.274
		(AC-FT)	34.	41.	41.	41.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
128.	5.67	115.	75.	75.	75.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
9.85	5.67	8.98	6.13	6.13	6.13

CUMULATIVE AREA = 2.80 SQ MI

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .73

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	*	1		0320	41	35.	23.4	3.0	*	1		0640	81	68.	113
1		0005	2	0.	.0	.0	*	1		0325	42	36.	28.2	3.3	*	1		0645	82	68.	113
1		0010	3	0.	.0	.0	*	1		0330	43	38.	34.4	3.7	*	1		0650	83	68.	112
1		0015	4	0.	.0	.0	*	1		0335	44	41.	42.1	4.1	*	1		0655	84	68.	112
1		0020	5	0.	.0	.0	*	1		0340	45	45.	50.4	4.7	*	1		0700	85	68.	111
1		0025	6	0.	.0	.0	*	1		0345	46	49.	58.2	5.2	*	1		0705	86	68.	111
1		0030	7	0.	.1	.0	*	1		0350	47	52.	64.7	5.6	*	1		0710	87	68.	111
1		0035	8	1.	.2	.1	*	1		0355	48	55.	70.0	6.0	*	1		0715	88	68.	110
1		0040	9	2.	.4	.1	*	1		0400	49	56.	74.4	6.3	*	1		0720	89	68.	110
1		0045	10	3.	.7	.2	*	1		0405	50	58.	78.2	6.5	*	1		0725	90	67.	109
1		0050	11	3.	.9	.2	*	1		0410	51	59.	81.2	6.7	*	1		0730	91	67.	109
1		0055	12	4.	1.2	.3	*	1		0415	52	60.	83.5	6.9	*	1		0735	92	67.	108
1		0100	13	5.	1.4	.3	*	1		0420	53	60.	85.3	7.0	*	1		0740	93	67.	108

1	0105	14	6.	1.6	.4	*	1	0425	54	61.	86.9	7.1	*	1	0745	94	67.	107
1	0110	15	7.	1.8	.4	*	1	0430	55	61.	88.4	7.2	*	1	0750	95	67.	107
1	0115	16	7.	2.0	.5	*	1	0435	56	62.	90.2	7.3	*	1	0755	96	67.	106
1	0120	17	8.	2.2	.5	*	1	0440	57	62.	92.5	7.5	*	1	0800	97	67.	106
1	0125	18	9.	2.4	.6	*	1	0445	58	63.	95.5	7.7	*	1	0805	98	66.	105
1	0130	19	10.	2.7	.7	*	1	0450	59	65.	99.1	7.9	*	1	0810	99	66.	105
1	0135	20	11.	3.0	.8	*	1	0455	60	66.	103.1	8.2	*	1	0815	100	66.	105
1	0140	21	13.	3.5	.9	*	1	0500	61	67.	107.1	8.5	*	1	0820	101	66.	104
1	0145	22	15.	4.0	1.0	*	1	0505	62	68.	110.5	8.7	*	1	0825	102	66.	104
1	0150	23	17.	4.6	1.2	*	1	0510	63	68.	113.0	8.9	*	1	0830	103	66.	103
1	0155	24	20.	5.2	1.3	*	1	0515	64	69.	114.8	9.0	*	1	0835	104	66.	103
1	0200	25	22.	5.9	1.5	*	1	0520	65	69.	115.8	9.1	*	1	0840	105	66.	102
1	0205	26	25.	6.6	1.6	*	1	0525	66	69.	116.5	9.1	*	1	0845	106	66.	102
1	0210	27	28.	7.3	1.8	*	1	0530	67	69.	116.8	9.1	*	1	0850	107	65.	101
1	0215	28	30.	8.1	2.0	*	1	0535	68	69.	117.0	9.1	*	1	0855	108	65.	101
1	0220	29	30.	8.7	2.0	*	1	0540	69	69.	117.1	9.1	*	1	0900	109	65.	100
1	0225	30	30.	9.2	2.1	*	1	0545	70	69.	117.0	9.1	*	1	0905	110	65.	100
1	0230	31	30.	9.6	2.1	*	1	0550	71	69.	116.9	9.1	*	1	0910	111	65.	100
1	0235	32	31.	9.9	2.1	*	1	0555	72	69.	116.8	9.1	*	1	0915	112	65.	99
1	0240	33	31.	10.1	2.1	*	1	0600	73	69.	116.6	9.1	*	1	0920	113	65.	99
1	0245	34	31.	10.5	2.2	*	1	0605	74	69.	116.4	9.1	*	1	0925	114	65.	98
1	0250	35	31.	10.9	2.2	*	1	0610	75	69.	116.2	9.1	*	1	0930	115	64.	98
1	0255	36	31.	11.6	2.2	*	1	0615	76	69.	115.9	9.1	*	1	0935	116	64.	97
1	0300	37	31.	12.7	2.3	*	1	0620	77	69.	115.5	9.0	*	1	0940	117	64.	97
1	0305	38	32.	14.3	2.4	*	1	0625	78	69.	115.1	9.0	*	1	0945	118	64.	96
1	0310	39	33.	16.6	2.5	*	1	0630	79	69.	114.7	9.0	*	1	0950	119	64.	96
1	0315	40	34.	19.5	2.7	*	1	0635	80	69.	114.2	8.9	*	1	0955	120	64.	96

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
69.	5.67		66.	48.	48.	48.
		(INCHES)	.219	.262	.262	.262
		(AC-FT)	33.	39.	39.	39.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)					
117.	5.67		105.	68.	68.	68.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)					
9.14	5.67		8.32	5.67	5.67	5.67

CUMULATIVE AREA = 2.80 SQ MI

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .69

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	*	1		0320	41	34.	21.1	2.8	*	1		0640	81	66.	106
1		0005	2	0.	.0	.0	*	1		0325	42	36.	25.6	3.1	*	1		0645	82	66.	105
1		0010	3	0.	.0	.0	*	1		0330	43	37.	31.4	3.5	*	1		0650	83	66.	105
1		0015	4	0.	.0	.0	*	1		0335	44	40.	38.6	3.9	*	1		0655	84	66.	104
1		0020	5	0.	.0	.0	*	1		0340	45	43.	46.4	4.4	*	1		0700	85	66.	104
1		0025	6	0.	.0	.0	*	1		0345	46	47.	53.8	4.9	*	1		0705	86	66.	103
1		0030	7	0.	.1	.0	*	1		0350	47	50.	59.9	5.3	*	1		0710	87	66.	103
1		0035	8	1.	.2	.0	*	1		0355	48	52.	64.9	5.7	*	1		0715	88	66.	102
1		0040	9	1.	.3	.1	*	1		0400	49	55.	69.1	5.9	*	1		0720	89	66.	102
1		0045	10	2.	.5	.1	*	1		0405	50	56.	72.6	6.2	*	1		0725	90	65.	101
1		0050	11	3.	.7	.2	*	1		0410	51	57.	75.5	6.4	*	1		0730	91	65.	101
1		0055	12	4.	.9	.2	*	1		0415	52	58.	77.6	6.5	*	1		0735	92	65.	101
1		0100	13	4.	1.1	.3	*	1		0420	53	58.	79.4	6.6	*	1		0740	93	65.	100
1		0105	14	5.	1.3	.3	*	1		0425	54	59.	80.8	6.7	*	1		0745	94	65.	100
1		0110	15	6.	1.5	.4	*	1		0430	55	59.	82.2	6.8	*	1		0750	95	65.	99
1		0115	16	6.	1.7	.4	*	1		0435	56	60.	83.9	6.9	*	1		0755	96	65.	99
1		0120	17	7.	1.8	.5	*	1		0440	57	60.	86.0	7.1	*	1		0800	97	65.	98
1		0125	18	8.	2.0	.5	*	1		0445	58	61.	88.9	7.3	*	1		0805	98	64.	98
1		0130	19	9.	2.3	.6	*	1		0450	59	62.	92.3	7.5	*	1		0810	99	64.	97

1	0135	20	10.	2.6	.7	*	1	0455	60	64.	96.1	7.7	*	1	0815	100	64.	97
1	0140	21	11.	3.0	.8	*	1	0500	61	65.	99.9	8.0	*	1	0820	101	64.	97
1	0145	22	13.	3.5	.9	*	1	0505	62	66.	103.1	8.2	*	1	0825	102	64.	96
1	0150	23	15.	4.0	1.0	*	1	0510	63	66.	105.5	8.4	*	1	0830	103	64.	96
1	0155	24	17.	4.6	1.1	*	1	0515	64	67.	107.1	8.5	*	1	0835	104	64.	95
1	0200	25	19.	5.1	1.3	*	1	0520	65	67.	108.1	8.5	*	1	0840	105	63.	95
1	0205	26	22.	5.8	1.4	*	1	0525	66	67.	108.7	8.6	*	1	0845	106	63.	94
1	0210	27	24.	6.5	1.6	*	1	0530	67	67.	109.0	8.6	*	1	0850	107	63.	94
1	0215	28	27.	7.2	1.8	*	1	0535	68	67.	109.2	8.6	*	1	0855	108	63.	93
1	0220	29	29.	7.7	1.9	*	1	0540	69	67.	109.2	8.6	*	1	0900	109	63.	93
1	0225	30	30.	8.2	2.0	*	1	0545	70	67.	109.1	8.6	*	1	0905	110	63.	93
1	0230	31	30.	8.5	2.0	*	1	0550	71	67.	109.0	8.6	*	1	0910	111	63.	92
1	0235	32	30.	8.7	2.0	*	1	0555	72	67.	108.9	8.6	*	1	0915	112	62.	92
1	0240	33	30.	8.9	2.1	*	1	0600	73	67.	108.7	8.6	*	1	0920	113	62.	91
1	0245	34	30.	9.2	2.1	*	1	0605	74	67.	108.5	8.6	*	1	0925	114	62.	91
1	0250	35	30.	9.6	2.1	*	1	0610	75	67.	108.3	8.6	*	1	0930	115	62.	90
1	0255	36	31.	10.2	2.1	*	1	0615	76	67.	108.0	8.5	*	1	0935	116	62.	90
1	0300	37	31.	11.2	2.2	*	1	0620	77	67.	107.6	8.5	*	1	0940	117	62.	90
1	0305	38	31.	12.7	2.3	*	1	0625	78	67.	107.2	8.5	*	1	0945	118	62.	89
1	0310	39	32.	14.7	2.4	*	1	0630	79	67.	106.8	8.5	*	1	0950	119	61.	89
1	0315	40	33.	17.5	2.6	*	1	0635	80	67.	106.4	8.4	*	1	0955	120	61.	88

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
67.	5.67		64.	46.	46.	46.
		(INCHES)	.212	.253	.253	.253
		(AC-FT)	32.	38.	38.	38.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
109.	5.67	97.	63.	63.	63.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
8.61	5.67	7.83	5.33	5.33	5.33

CUMULATIVE AREA = 2.80 SQ MI

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .64

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	*	1		0320	41	33.	17.2	2.6	*	1		0640	81	62.	92
1		0005	2	0.	.0	.0	*	1		0325	42	34.	21.2	2.8	*	1		0645	82	62.	91
1		0010	3	0.	.0	.0	*	1		0330	43	36.	26.3	3.1	*	1		0650	83	62.	91
1		0015	4	0.	.0	.0	*	1		0335	44	38.	32.6	3.5	*	1		0655	84	62.	90
1		0020	5	0.	.0	.0	*	1		0340	45	40.	39.6	4.0	*	1		0700	85	62.	90
1		0025	6	0.	.0	.0	*	1		0345	46	43.	46.1	4.4	*	1		0705	86	62.	90
1		0030	7	0.	.0	.0	*	1		0350	47	46.	51.5	4.8	*	1		0710	87	62.	89
1		0035	8	0.	.1	.0	*	1		0355	48	48.	55.9	5.1	*	1		0715	88	61.	89
1		0040	9	1.	.2	.0	*	1		0400	49	50.	59.7	5.3	*	1		0720	89	61.	88
1		0045	10	1.	.3	.1	*	1		0405	50	51.	62.8	5.5	*	1		0725	90	61.	88
1		0050	11	2.	.5	.1	*	1		0410	51	53.	65.4	5.7	*	1		0730	91	61.	87
1		0055	12	2.	.6	.2	*	1		0415	52	54.	67.3	5.8	*	1		0735	92	61.	87
1		0100	13	3.	.8	.2	*	1		0420	53	54.	68.8	5.9	*	1		0740	93	61.	87
1		0105	14	3.	.9	.2	*	1		0425	54	55.	70.0	6.0	*	1		0745	94	61.	86
1		0110	15	4.	1.0	.3	*	1		0430	55	55.	71.3	6.1	*	1		0750	95	60.	86
1		0115	16	4.	1.2	.3	*	1		0435	56	56.	72.7	6.2	*	1		0755	96	60.	85
1		0120	17	5.	1.3	.3	*	1		0440	57	57.	74.7	6.3	*	1		0800	97	60.	85
1		0125	18	5.	1.5	.4	*	1		0445	58	57.	77.2	6.5	*	1		0805	98	60.	84
1		0130	19	6.	1.7	.4	*	1		0450	59	58.	80.2	6.7	*	1		0810	99	60.	84
1		0135	20	7.	1.9	.5	*	1		0455	60	60.	83.7	6.9	*	1		0815	100	60.	84
1		0140	21	8.	2.2	.6	*	1		0500	61	61.	87.0	7.1	*	1		0820	101	60.	83
1		0145	22	10.	2.6	.7	*	1		0505	62	62.	89.9	7.3	*	1		0825	102	59.	83
1		0150	23	11.	3.0	.8	*	1		0510	63	62.	92.1	7.5	*	1		0830	103	59.	82
1		0155	24	13.	3.4	.9	*	1		0515	64	63.	93.5	7.6	*	1		0835	104	59.	82
1		0200	25	15.	3.9	1.0	*	1		0520	65	63.	94.4	7.6	*	1		0840	105	59.	82

1	0205	26	17.	4.4	1.1	*	1	0525	66	63.	94.9	7.7	*	1	0845	106	59.	81
1	0210	27	19.	5.0	1.2	*	1	0530	67	63.	95.1	7.7	*	1	0850	107	59.	81
1	0215	28	21.	5.6	1.4	*	1	0535	68	63.	95.2	7.7	*	1	0855	108	59.	80
1	0220	29	23.	6.0	1.5	*	1	0540	69	63.	95.2	7.7	*	1	0900	109	58.	80
1	0225	30	24.	6.4	1.6	*	1	0545	70	63.	95.1	7.7	*	1	0905	110	58.	80
1	0230	31	25.	6.6	1.7	*	1	0550	71	63.	95.0	7.7	*	1	0910	111	58.	79
1	0235	32	26.	6.8	1.7	*	1	0555	72	63.	94.9	7.7	*	1	0915	112	58.	79
1	0240	33	26.	7.0	1.7	*	1	0600	73	63.	94.7	7.6	*	1	0920	113	58.	78
1	0245	34	27.	7.2	1.8	*	1	0605	74	63.	94.5	7.6	*	1	0925	114	58.	78
1	0250	35	28.	7.5	1.9	*	1	0610	75	63.	94.3	7.6	*	1	0930	115	58.	78
1	0255	36	30.	8.0	2.0	*	1	0615	76	63.	94.0	7.6	*	1	0935	116	58.	77
1	0300	37	30.	8.8	2.1	*	1	0620	77	63.	93.7	7.6	*	1	0940	117	57.	77
1	0305	38	31.	10.0	2.1	*	1	0625	78	63.	93.3	7.6	*	1	0945	118	57.	76
1	0310	39	31.	11.8	2.2	*	1	0630	79	63.	92.9	7.5	*	1	0950	119	57.	76
1	0315	40	32.	14.1	2.4	*	1	0635	80	62.	92.5	7.5	*	1	0955	120	57.	76

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
63.	5.58		60.	43.	43.	43.
		(INCHES)	.198	.234	.234	.234
		(AC-FT)	30.	35.	35.	35.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)					
95.	5.58		84.	54.	54.	54.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)					
7.68	5.58		6.96	4.72	4.72	4.72

CUMULATIVE AREA = 2.80 SQ MI

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .58

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0	*	1		0320	41	32.	13.5	2.3	*	1		0640	81	58.	77
1		0005	2	0.	.0	.0	*	1		0325	42	33.	16.9	2.6	*	1		0645	82	57.	77
1		0010	3	0.	.0	.0	*	1		0330	43	34.	21.2	2.8	*	1		0650	83	57.	76
1		0015	4	0.	.0	.0	*	1		0335	44	36.	26.6	3.2	*	1		0655	84	57.	76
1		0020	5	0.	.0	.0	*	1		0340	45	38.	32.6	3.5	*	1		0700	85	57.	76
1		0025	6	0.	.0	.0	*	1		0345	46	39.	38.2	3.9	*	1		0705	86	57.	75
1		0030	7	0.	.0	.0	*	1		0350	47	41.	42.9	4.2	*	1		0710	87	57.	75
1		0035	8	0.	.0	.0	*	1		0355	48	43.	46.7	4.4	*	1		0715	88	57.	74
1		0040	9	0.	.1	.0	*	1		0400	49	45.	50.0	4.7	*	1		0720	89	56.	74
1		0045	10	1.	.1	.0	*	1		0405	50	46.	52.7	4.8	*	1		0725	90	56.	74
1		0050	11	1.	.2	.1	*	1		0410	51	47.	54.9	5.0	*	1		0730	91	56.	73
1		0055	12	1.	.3	.1	*	1		0415	52	48.	56.5	5.1	*	1		0735	92	56.	73
1		0100	13	2.	.4	.1	*	1		0420	53	49.	57.8	5.2	*	1		0740	93	56.	72
1		0105	14	2.	.5	.1	*	1		0425	54	49.	58.9	5.3	*	1		0745	94	56.	72
1		0110	15	2.	.6	.2	*	1		0430	55	50.	59.9	5.3	*	1		0750	95	56.	72
1		0115	16	3.	.7	.2	*	1		0435	56	51.	61.2	5.4	*	1		0755	96	56.	71
1		0120	17	3.	.8	.2	*	1		0440	57	51.	62.8	5.5	*	1		0800	97	55.	71
1		0125	18	3.	.9	.2	*	1		0445	58	53.	65.0	5.7	*	1		0805	98	55.	71
1		0130	19	4.	1.1	.3	*	1		0450	59	54.	67.7	5.8	*	1		0810	99	55.	70
1		0135	20	5.	1.3	.3	*	1		0455	60	55.	70.7	6.0	*	1		0815	100	55.	70
1		0140	21	6.	1.5	.4	*	1		0500	61	56.	73.6	6.2	*	1		0820	101	55.	69
1		0145	22	7.	1.8	.5	*	1		0505	62	57.	76.2	6.4	*	1		0825	102	55.	69
1		0150	23	8.	2.1	.5	*	1		0510	63	58.	78.0	6.5	*	1		0830	103	55.	69
1		0155	24	9.	2.4	.6	*	1		0515	64	58.	79.2	6.6	*	1		0835	104	54.	68
1		0200	25	10.	2.8	.7	*	1		0520	65	58.	80.0	6.7	*	1		0840	105	54.	68
1		0205	26	12.	3.2	.8	*	1		0525	66	58.	80.4	6.7	*	1		0845	106	54.	68
1		0210	27	13.	3.6	.9	*	1		0530	67	59.	80.6	6.7	*	1		0850	107	54.	67
1		0215	28	15.	4.0	1.0	*	1		0535	68	59.	80.6	6.7	*	1		0855	108	54.	67
1		0220	29	16.	4.4	1.1	*	1		0540	69	59.	80.6	6.7	*	1		0900	109	53.	66
1		0225	30	17.	4.7	1.2	*	1		0545	70	58.	80.5	6.7	*	1		0905	110	53.	66
1		0230	31	18.	4.9	1.2	*	1		0550	71	58.	80.4	6.7	*	1		0910	111	53.	66

1	0235	32	19.	5.0	1.3 *	1	0555	72	58.	80.2	6.7 *	1	0915	112	53.	65
1	0240	33	19.	5.2	1.3 *	1	0600	73	58.	80.0	6.7 *	1	0920	113	53.	65
1	0245	34	20.	5.4	1.3 *	1	0605	74	58.	79.9	6.7 *	1	0925	114	53.	65
1	0250	35	21.	5.6	1.4 *	1	0610	75	58.	79.6	6.6 *	1	0930	115	52.	64
1	0255	36	23.	6.0	1.5 *	1	0615	76	58.	79.4	6.6 *	1	0935	116	52.	64
1	0300	37	25.	6.7	1.7 *	1	0620	77	58.	79.1	6.6 *	1	0940	117	52.	64
1	0305	38	29.	7.7	1.9 *	1	0625	78	58.	78.7	6.6 *	1	0945	118	52.	63
1	0310	39	30.	9.0	2.1 *	1	0630	79	58.	78.4	6.6 *	1	0950	119	52.	63
1	0315	40	31.	11.0	2.2 *	1	0635	80	58.	78.0	6.5 *	1	0955	120	51.	62

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
59.	5.58		55.	39.	39.	39.
		(INCHES)	.182	.212	.212	.212
		(AC-FT)	27.	32.	32.	32.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
81.	5.58	71.	46.	46.	46.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
6.71	5.58	6.05	4.08	4.08	4.08

CUMULATIVE AREA = 2.80 SQ MI

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HYDROGRAPH AT STATION MCDB
PLAN 1, RATIO = .53

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORA
1		0000	1	0.	.0	.0 *	1		0320	41	31.	10.8	2.2 *	1		0640	81	53.	66
1		0005	2	0.	.0	.0 *	1		0325	42	32.	13.7	2.4 *	1		0645	82	53.	65
1		0010	3	0.	.0	.0 *	1		0330	43	33.	17.4	2.6 *	1		0650	83	53.	65
1		0015	4	0.	.0	.0 *	1		0335	44	34.	22.0	2.9 *	1		0655	84	52.	64
1		0020	5	0.	.0	.0 *	1		0340	45	36.	27.2	3.2 *	1		0700	85	52.	64
1		0025	6	0.	.0	.0 *	1		0345	46	38.	32.0	3.5 *	1		0705	86	52.	64
1		0030	7	0.	.0	.0 *	1		0350	47	39.	36.1	3.8 *	1		0710	87	52.	63
1		0035	8	0.	.0	.0 *	1		0355	48	40.	39.4	4.0 *	1		0715	88	52.	63
1		0040	9	0.	.0	.0 *	1		0400	49	41.	42.3	4.2 *	1		0720	89	52.	63
1		0045	10	0.	.1	.0 *	1		0405	50	42.	44.7	4.3 *	1		0725	90	51.	62
1		0050	11	0.	.1	.0 *	1		0410	51	43.	46.5	4.4 *	1		0730	91	51.	62
1		0055	12	1.	.1	.0 *	1		0415	52	44.	48.0	4.5 *	1		0735	92	51.	62
1		0100	13	1.	.2	.1 *	1		0420	53	45.	49.0	4.6 *	1		0740	93	51.	61
1		0105	14	1.	.3	.1 *	1		0425	54	45.	50.0	4.7 *	1		0745	94	51.	61
1		0110	15	1.	.3	.1 *	1		0430	55	45.	50.9	4.7 *	1		0750	95	51.	61
1		0115	16	1.	.4	.1 *	1		0435	56	46.	51.9	4.8 *	1		0755	96	50.	60
1		0120	17	2.	.5	.1 *	1		0440	57	47.	53.4	4.9 *	1		0800	97	50.	60
1		0125	18	2.	.6	.1 *	1		0445	58	48.	55.3	5.0 *	1		0805	98	50.	60
1		0130	19	3.	.7	.2 *	1		0450	59	49.	57.6	5.2 *	1		0810	99	50.	59
1		0135	20	3.	.8	.2 *	1		0455	60	50.	60.3	5.4 *	1		0815	100	50.	59
1		0140	21	4.	1.0	.3 *	1		0500	61	51.	62.9	5.5 *	1		0820	101	49.	59
1		0145	22	5.	1.2	.3 *	1		0505	62	53.	65.1	5.7 *	1		0825	102	49.	58
1		0150	23	6.	1.5	.4 *	1		0510	63	53.	66.7	5.8 *	1		0830	103	49.	58
1		0155	24	7.	1.7	.4 *	1		0515	64	54.	67.8	5.9 *	1		0835	104	49.	57
1		0200	25	8.	2.0	.5 *	1		0520	65	54.	68.4	5.9 *	1		0840	105	49.	57
1		0205	26	9.	2.3	.6 *	1		0525	66	54.	68.7	5.9 *	1		0845	106	49.	57
1		0210	27	10.	2.6	.7 *	1		0530	67	54.	68.8	5.9 *	1		0850	107	48.	56
1		0215	28	11.	3.0	.7 *	1		0535	68	54.	68.9	5.9 *	1		0855	108	48.	56
1		0220	29	12.	3.2	.8 *	1		0540	69	54.	68.8	5.9 *	1		0900	109	48.	56
1		0225	30	13.	3.5	.9 *	1		0545	70	54.	68.7	5.9 *	1		0905	110	48.	55
1		0230	31	14.	3.7	.9 *	1		0550	71	54.	68.6	5.9 *	1		0910	111	48.	55
1		0235	32	14.	3.8	1.0 *	1		0555	72	54.	68.4	5.9 *	1		0915	112	48.	55
1		0240	33	15.	3.9	1.0 *	1		0600	73	54.	68.3	5.9 *	1		0920	113	47.	54
1		0245	34	15.	4.1	1.0 *	1		0605	74	54.	68.1	5.9 *	1		0925	114	47.	54
1		0250	35	16.	4.3	1.1 *	1		0610	75	54.	67.9	5.9 *	1		0930	115	47.	54
1		0255	36	17.	4.6	1.2 *	1		0615	76	54.	67.6	5.8 *	1		0935	116	47.	54
1		0300	37	19.	5.2	1.3 *	1		0620	77	54.	67.3	5.8 *	1		0940	117	47.	53

1	0305	38	22.	6.0	1.5	*	1	0625	78	54.	67.0	5.8	*	1	0945	118	47.	53
1	0310	39	27.	7.1	1.8	*	1	0630	79	53.	66.7	5.8	*	1	0950	119	47.	53
1	0315	40	30.	8.7	2.0	*	1	0635	80	53.	66.3	5.8	*	1	0955	120	46.	52
						*							*					

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	9.92-HR□
(CFS)	(HR)					
		(CFS)□				
54.	5.58		50.	35.	35.	35.
		(INCHES)	.166	.191	.191	.191
		(AC-FT)	25.	29.	29.	29.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(AC-FT)	(HR)				
69.	5.58	60.	38.	38.	38.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	9.92-HR□
(FEET)	(HR)				
5.92	5.58	5.34	3.58	3.58	3.58

CUMULATIVE AREA = 2.80 SQ MI

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .83	RATIO 2 .80	RATIO 3 .76	RATIO 4 .73	RATIO 5 .69	RATIO 6 .64	RATIO 7 .58	RATIO .
HYDROGRAPH AT	B13A	1.29	1	FLOW	580.	551.	512.	471.	441.	387.	329.	28
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
ROUTED TO	RB13A	1.29	1	FLOW	533.	507.	470.	433.	406.	356.	302.	25
				TIME	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.
HYDROGRAPH AT	B13B	.54	1	FLOW	148.	140.	130.	120.	112.	98.	84.	7
				TIME	5.08	5.08	5.08	5.17	5.17	5.25	5.33	5.
2 COMBINED AT	PT1	1.83	1	FLOW	675.	641.	595.	547.	512.	448.	380.	32
				TIME	4.75	4.75	4.75	4.75	4.75	4.75	4.75	4.
ROUTED TO	RPT1	1.83	1	FLOW	658.	626.	581.	535.	501.	439.	372.	31
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
HYDROGRAPH AT	B17	.82	1	FLOW	258.	244.	226.	207.	193.	168.	142.	12
				TIME	4.33	4.33	4.33	4.33	4.42	4.42	4.42	4.
2 COMBINED AT	PT2	2.64	1	FLOW	864.	821.	762.	702.	657.	577.	490.	42
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08	5.
VERSION TO	DVBD2	2.64	1	FLOW	350.	337.	319.	301.	288.	263.	237.	21
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08	5.
HYDROGRAPH AT	DVBD2	2.64	1	FLOW	514.	484.	443.	401.	370.	314.	253.	20
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08	5.
ROUTED TO	RPT2	2.64	1	FLOW	513.	483.	442.	400.	370.	313.	253.	20
				TIME	5.08	5.08	5.08	5.08	5.08	5.17	5.17	5.
HYDROGRAPH AT	B13C	2.01	1	FLOW	893.	848.	785.	721.	674.	588.	496.	42
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.
2 COMBINED AT	PT3	4.65	1	FLOW	1052.	998.	924.	848.	792.	688.	577.	48
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
DIVERSION TO	DVBD3	4.65	1	FLOW	273.	271.	268.	265.	263.	259.	255.	25
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
HYDROGRAPH AT	DVBD3	4.65	1	FLOW	779.	727.	655.	583.	529.	429.	322.	23
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
ROUTED TO	RPT3A	4.65	1	FLOW	773.	722.	653.	581.	526.	429.	322.	23
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.
DIVERSION TO	DVBD4	4.65	1	FLOW	178.	173.	165.	158.	152.	140.	126.	11
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.
DROGRAPH AT	DVBD4	4.65	1	FLOW	595.	549.	488.	424.	375.	289.	196.	12
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.

ROUTED TO□	RPT3B	4.65	1	FLOW	583.	537.	476.	412.	364.	279.	187.	11
				TIME	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.
[redacted]DROGRAPH AT□	B11S	1.12	1	FLOW	259.	240.	214.	189.	170.	138.	104.	8
				TIME	4.00	4.00	4.08	4.08	4.08	4.08	4.08	5.
HYDROGRAPH AT□	HYDRO1	.63	1	FLOW	623.	623.	623.	623.	623.	623.	623.	62
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
3 COMBINED AT□	PT4	6.40	1	FLOW	1428.	1359.	1265.	1171.	1099.	977.	847.	75
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
ROUTED TO□	RPT4A	6.40	1	FLOW	1377.	1310.	1218.	1126.	1057.	939.	813.	72
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.
DIVERSION TO□	DVBD7	6.40	1	FLOW	918.	873.	812.	751.	705.	626.	542.	48
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.
HYDROGRAPH AT□	DVBD7	6.40	1	FLOW	459.	437.	406.	375.	352.	313.	271.	24
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.
ROUTED TO□	RPT4B	6.40	1	FLOW	446.	424.	394.	364.	341.	303.	262.	23
				TIME	4.42	4.42	4.42	4.50	4.50	4.50	4.42	4.
HYDROGRAPH AT□	B14B	.99	1	FLOW	226.	209.	186.	163.	146.	118.	89.	6
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92	3.
2 COMBINED AT□	PT22W	7.39	1	FLOW	563.	533.	492.	451.	421.	369.	314.	27
				TIME	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.
[redacted]DROGRAPH AT□	D012A	10.21	1	FLOW	2260.	2129.	1950.	1770.	1639.	1403.	1157.	96
				TIME	5.08	5.08	5.17	5.25	5.25	5.25	5.33	5.
ROUTED TO□	RD012A	10.21	1	FLOW	2260.	2129.	1950.	1770.	1639.	1403.	1156.	96
				TIME	5.08	5.08	5.17	5.25	5.25	5.33	5.33	5.
DIVERSION TO□	DVI151	10.21	1	FLOW	1276.	1255.	1227.	1198.	1171.	1121.	1049.	96
				TIME	5.08	5.08	5.17	5.25	5.25	5.33	5.33	5.
HYDROGRAPH AT□	DVI151	10.21	1	FLOW	984.	874.	723.	572.	468.	282.	108.	
				TIME	5.08	5.08	5.17	5.25	5.25	5.33	5.33	5.
ROUTED TO□	RI151	10.21	1	FLOW	983.	873.	722.	571.	467.	281.	107.	
				TIME	5.17	5.17	5.25	5.25	5.33	5.33	5.42	5.
DIVERSION TO□	DVI152	10.21	1	FLOW	380.	341.	285.	229.	190.	112.	39.	
				TIME	5.17	5.17	5.25	5.25	5.33	5.33	5.42	5.
HYDROGRAPH AT□	DVI152	10.21	1	FLOW	604.	532.	437.	342.	277.	169.	68.	
				TIME	5.17	5.17	5.25	5.25	5.33	5.33	5.42	5.
ROUTED TO□	RI152	10.21	1	FLOW	601.	530.	435.	340.	275.	168.	66.	
				TIME	5.33	5.33	5.33	5.42	5.42	5.50	5.58	5.
HYDROGRAPH AT□	D01	9.54	1	FLOW	3126.	2950.	2709.	2466.	2286.	1962.	1621.	134
				TIME	4.42	4.42	4.50	4.50	4.50	4.50	4.50	4.
[redacted]OUTED TO□	RD01	9.54	1	FLOW	2893.	2732.	2510.	2286.	2121.	1825.	1512.	126
				TIME	5.17	5.17	5.17	5.17	5.25	5.25	5.25	5.

HYDROGRAPH AT□	D005	2.73	1	FLOW	934.	879.	803.	727.	670.	569.	465.	38
				TIME	4.17	4.17	4.17	4.17	4.17	4.25	4.25	4.
2 COMBINED AT□	PT9	12.27	1	FLOW	3580.	3384.	3114.	2843.	2642.	2280.	1895.	158
				TIME	5.17	5.17	5.25	5.25	5.25	5.25	5.25	5.
ROUTED TO□	RD005	12.27	1	FLOW	3529.	3337.	3072.	2803.	2604.	2245.	1868.	156
				TIME	5.42	5.42	5.42	5.42	5.42	5.42	5.50	5.
HYDROGRAPH AT□	D02	5.91	1	FLOW	1927.	1819.	1671.	1521.	1409.	1210.	999.	83
				TIME	4.50	4.50	4.50	4.50	4.50	4.50	4.58	4.
ROUTED TO□	RD02	5.91	1	FLOW	1798.	1698.	1561.	1423.	1321.	1137.	943.	78
				TIME	5.17	5.17	5.25	5.25	5.25	5.25	5.33	5.
HYDROGRAPH AT□	D03	11.99	1	FLOW	4032.	3806.	3495.	3180.	2947.	2528.	2086.	173
				TIME	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.
HYDROGRAPH AT□	D04	6.95	1	FLOW	2254.	2131.	1960.	1787.	1660.	1432.	1190.	99
				TIME	4.50	4.50	4.50	4.50	4.58	4.58	4.58	4.
2 COMBINED AT□	PT10	18.94	1	FLOW	6270.	5920.	5438.	4950.	4589.	3945.	3266.	272
				TIME	4.42	4.42	4.42	4.42	4.42	4.50	4.50	4.
ROUTED TO□	RPT10	18.94	1	FLOW	5597.	5291.	4870.	4443.	4130.	3565.	2974.	250
				TIME	5.42	5.42	5.42	5.50	5.50	5.50	5.67	5.
HYDROGRAPH AT□	D006	8.52	1	FLOW	2804.	2643.	2421.	2199.	2034.	1739.	1428.	117
				TIME	4.25	4.25	4.33	4.33	4.33	4.33	4.33	4.
3 COMBINED AT□	PT11	33.37	1	FLOW	9528.	9015.	8307.	7588.	7056.	6096.	5082.	427
				TIME	5.33	5.33	5.33	5.33	5.33	5.33	5.42	5.
ROUTED TO□	RPT11	33.37	1	FLOW	9430.	8921.	8218.	7506.	6978.	6030.	5031.	422
				TIME	5.50	5.50	5.50	5.50	5.50	5.58	5.58	5.
HYDROGRAPH AT□	D2A	.99	1	FLOW	573.	541.	497.	453.	420.	361.	299.	24
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
3 COMBINED AT□	PT12	46.63	1	FLOW	13034.	12325.	11346.	10363.	9635.	8323.	6931.	581
				TIME	5.42	5.42	5.42	5.50	5.50	5.50	5.50	5.
ROUTED TO□	RPT12	46.63	1	FLOW	12288.	11624.	10708.	9780.	9092.	7853.	6548.	549
				TIME	6.25	6.33	6.33	6.33	6.33	6.33	6.42	6.
HYDROGRAPH AT□	D2B	7.50	1	FLOW	1583.	1482.	1344.	1207.	1109.	936.	760.	62
				TIME	4.75	4.83	4.83	4.92	5.08	5.17	5.33	5.
2 COMBINED AT□	PT13	54.13	1	FLOW	13326.	12595.	11587.	10572.	9822.	8471.	7040.	590
				TIME	6.17	6.17	6.17	6.25	6.25	6.25	6.33	6.
ROUTED TO□	RPT13	54.13	1	FLOW	12688.	11992.	11031.	10066.	9352.	8065.	6705.	561
				TIME	7.08	7.08	7.17	7.17	7.17	7.17	7.25	7.
HYDROGRAPH AT□	D06	11.68	1	FLOW	3284.	3103.	2852.	2598.	2410.	2072.	1718.	143
				TIME	4.75	4.75	4.75	4.75	4.75	4.75	4.83	5.
ROUTED TO□	RD06	11.68	1	FLOW	3098.	2929.	2699.	2465.	2292.	1981.	1654.	139

				TIME	5.67	5.67	5.75	5.75	5.75	5.83	5.83	5.
HYDROGRAPH AT□	D3	6.64	1	FLOW	1056.	981.	883.	790.	722.	601.	477.	38
				TIME	4.83	5.00	5.33	5.42	5.42	5.42	5.50	5.
4 COMBINED AT□	PT14	82.66	1	FLOW	15109.	14252.	13078.	11900.	11044.	9510.	7891.	660
				TIME	6.75	6.83	6.83	6.83	6.92	6.92	7.00	7.
DIVERSION TO□	DVI153	82.66	1	FLOW	9190.	8562.	7702.	6840.	6212.	5088.	4041.	326
				TIME	6.75	6.83	6.83	6.83	6.92	6.92	7.00	7.
HYDROGRAPH AT□	DVI153	82.66	1	FLOW	5919.	5690.	5376.	5060.	4831.	4422.	3850.	333
				TIME	6.75	6.83	6.83	6.83	6.92	6.92	7.00	7.
ROUTED TO□	RPT14	82.66	1	FLOW	5894.	5666.	5355.	5043.	4812.	4405.	3829.	331
				TIME	7.25	7.25	7.33	7.33	7.33	7.42	7.42	7.
HYDROGRAPH AT□	D1A	2.29	1	FLOW	770.	725.	665.	603.	558.	476.	391.	32
				TIME	4.25	4.25	4.25	4.25	4.25	4.25	4.33	4.
ROUTED TO□	RD1A	2.29	1	FLOW	758.	714.	655.	594.	549.	469.	386.	31
				TIME	4.42	4.42	4.42	4.42	4.42	4.50	4.50	4.
HYDROGRAPH AT□	D1B	.32	1	FLOW	89.	84.	77.	70.	65.	56.	46.	3
				TIME	4.50	4.50	4.58	4.58	4.58	4.58	4.58	4.
2 COMBINED AT□	PT15	2.61	1	FLOW	846.	798.	731.	663.	613.	525.	431.	35
				TIME	4.42	4.42	4.42	4.42	4.50	4.50	4.50	4.
ROUTED TO□	RPT15	2.61	1	FLOW	825.	777.	713.	647.	599.	513.	421.	34
				TIME	4.75	4.75	4.83	4.83	4.83	4.83	4.83	4.
HYDROGRAPH AT□	D1C	.56	1	FLOW	128.	120.	110.	100.	92.	79.	65.	5
				TIME	4.92	5.00	5.08	5.08	5.17	5.25	5.25	5.
2 COMBINED AT□	PT16	3.17	1	FLOW	951.	897.	822.	746.	690.	590.	484.	39
				TIME	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.
ROUTED TO□	RPT16	3.17	1	FLOW	936.	883.	809.	734.	679.	580.	476.	39
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
HYDROGRAPH AT□	D1D	1.23	1	FLOW	443.	416.	379.	341.	314.	265.	213.	17
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.
ROUTED TO□	RD1D	1.23	1	FLOW	431.	405.	369.	332.	305.	257.	207.	16
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
HYDROGRAPH AT□	D1E	.22	1	FLOW	47.	44.	40.	35.	32.	27.	22.	1
				TIME	4.58	4.58	4.58	4.58	4.58	4.67	5.33	5.
HYDROGRAPH AT□	D1F	.81	1	FLOW	104.	97.	86.	76.	69.	56.	43.	3
				TIME	5.58	5.58	5.67	5.67	5.67	5.67	5.75	5.
4 COMBINED AT□	PT17	5.43	1	FLOW	1351.	1274.	1167.	1060.	981.	838.	690.	57
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.25	5.
OUTED TO□	RPT17	5.43	1	FLOW	1315.	1240.	1136.	1031.	953.	815.	670.	55
				TIME	5.67	5.67	5.67	5.67	5.67	5.67	5.75	5.
HYDROGRAPH AT□												

	B18A	1.50	1	FLOW	162.	150.	133.	116.	104.	82.	61.	4
				TIME	5.25	5.25	5.25	5.25	5.25	5.33	5.33	5.
COMBINED AT□												
	PT18	89.59	1	FLOW	6565.	6295.	5922.	5549.	5274.	4781.	4114.	353
				TIME	6.92	6.92	6.92	7.00	7.00	7.08	7.25	7.
DIVERSION TO□												
	DVI154	89.59	1	FLOW	1301.	1291.	1277.	1263.	1252.	1232.	1204.	115
				TIME	6.92	6.92	6.92	7.00	7.00	7.08	7.25	7.
HYDROGRAPH AT□												
	DVI154	89.59	1	FLOW	5264.	5004.	4646.	4286.	4022.	3549.	2910.	238
				TIME	6.92	6.92	6.92	7.00	7.00	7.08	7.25	7.
ROUTED TO□												
	RPT18	89.59	1	FLOW	5255.	4995.	4639.	4280.	4015.	3541.	2905.	238
				TIME	7.00	7.08	7.08	7.08	7.08	7.17	7.33	7.
HYDROGRAPH AT□												
	B18B	1.92	1	FLOW	677.	640.	589.	538.	500.	431.	358.	30
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
HYDROGRAPH AT□												
	DVBD2	.00	1	FLOW	350.	337.	319.	301.	288.	263.	237.	21
				TIME	5.00	5.00	5.00	5.00	5.08	5.08	5.08	5.
ROUTED TO□												
	RDVBD2	.00	1	FLOW	343.	331.	314.	296.	283.	259.	233.	21
				TIME	5.58	5.58	5.58	5.58	5.58	5.58	5.58	5.
3 COMBINED AT□												
	PT19	91.51	1	FLOW	5508.	5238.	4868.	4496.	4221.	3721.	3058.	251
				TIME	6.92	6.92	7.00	7.00	7.00	7.08	7.25	7.
DIVERSION TO□												
	DVI155	91.51	1	FLOW	2974.	2815.	2624.	2513.	2416.	2277.	2089.	183
				TIME	6.92	6.92	7.00	7.00	7.00	7.08	7.25	7.
DROGRAPH AT□												
	DVI155	91.51	1	FLOW	2534.	2423.	2244.	1983.	1806.	1444.	968.	68
				TIME	6.92	6.92	7.00	7.00	7.00	7.08	7.25	7.
ROUTED TO□												
	RPT19	91.51	1	FLOW	2522.	2412.	2226.	1967.	1790.	1423.	953.	67
				TIME	7.58	7.58	7.58	7.67	7.67	7.75	7.92	8.
HYDROGRAPH AT□												
	B14A	1.35	1	FLOW	670.	637.	590.	543.	507.	443.	375.	32
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.
HYDROGRAPH AT□												
	RDVBD3	.00	1	FLOW	273.	271.	268.	265.	263.	259.	255.	25
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
HYDROGRAPH AT□												
	RDVBD4	.00	1	FLOW	178.	173.	165.	158.	152.	140.	126.	11
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.
2 COMBINED AT□												
	PT20	.00	1	FLOW	450.	443.	433.	423.	415.	399.	381.	36
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.
ROUTED TO□												
	RDVBD4	.00	1	FLOW	444.	436.	427.	416.	408.	392.	375.	36
				TIME	5.58	5.58	5.58	5.58	5.58	5.67	5.67	5.
3 COMBINED AT□												
	PT21	92.86	1	FLOW	2750.	2618.	2361.	2075.	1873.	1462.	966.	68
				TIME	7.00	7.00	7.17	7.25	7.42	7.67	7.83	7.
2 COMBINED AT□												
	PT22	100.25	1	FLOW	2808.	2668.	2404.	2115.	1910.	1496.	1000.	88
				TIME	6.92	7.00	7.08	7.25	7.42	7.67	7.83	5.
UTED TO□												
	RPT22	100.25	1	FLOW	2800.	2658.	2398.	2110.	1903.	1487.	994.	87
				TIME	7.17	7.25	7.42	7.58	7.67	7.92	8.08	5.

HYDROGRAPH AT□	B15B	.95	1	FLOW	199.	186.	168.	149.	136.	113.	90.	7
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.
COMBINED AT□	PT23	101.20	1	FLOW	2809.	2664.	2402.	2113.	1905.	1488.	1063.	94
				TIME	7.17	7.25	7.42	7.50	7.67	7.92	5.33	5.
HYDROGRAPH AT□	RDVI151	.00	1	FLOW	1276.	1255.	1227.	1198.	1171.	1121.	1049.	96
				TIME	5.08	5.08	5.17	5.25	5.25	5.33	5.33	5.
ROUTED TO□	RDVI151	.00	1	FLOW	1276.	1255.	1227.	1198.	1170.	1120.	1048.	95
				TIME	5.17	5.25	5.25	5.33	5.33	5.42	5.42	5.
HYDROGRAPH AT□	RDVI152	.00	1	FLOW	380.	341.	285.	229.	190.	112.	39.	
				TIME	5.17	5.17	5.25	5.25	5.33	5.33	5.42	5.
ROUTED TO□	RDVI152	.00	1	FLOW	379.	341.	285.	228.	190.	111.	39.	
				TIME	5.25	5.25	5.33	5.33	5.42	5.42	5.50	5.
2 COMBINED AT□	PT24	.00	1	FLOW	1655.	1595.	1511.	1426.	1359.	1231.	1087.	95
				TIME	5.25	5.25	5.33	5.33	5.33	5.42	5.50	5.
ROUTED TO□	RPT24	.00	1	FLOW	1654.	1595.	1510.	1426.	1359.	1230.	1086.	95
				TIME	5.33	5.33	5.42	5.42	5.42	5.50	5.58	5.
HYDROGRAPH AT□	D009	3.62	1	FLOW	1626.	1535.	1408.	1280.	1185.	1015.	836.	69
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.
ROUTED TO□	RD009	3.62	1	FLOW	1586.	1496.	1372.	1247.	1154.	988.	812.	67
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.
DROGRAPH AT□	D004	2.40	1	FLOW	1001.	947.	873.	798.	743.	643.	537.	45
				TIME	4.08	4.08	4.08	4.08	4.08	4.17	4.17	4.
2 COMBINED AT□	PT5	6.02	1	FLOW	2567.	2426.	2232.	2035.	1889.	1626.	1347.	112
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
ROUTED TO□	RPT5	6.02	1	FLOW	2262.	2137.	1965.	1790.	1661.	1429.	1183.	98
				TIME	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.
HYDROGRAPH AT□	D08	11.91	1	FLOW	3172.	3008.	2780.	2551.	2381.	2074.	1746.	148
				TIME	5.50	5.50	5.50	5.58	5.58	5.58	5.58	5.
2 COMBINED AT□	PT6	17.93	1	FLOW	4808.	4564.	4228.	3885.	3630.	3169.	2677.	228
				TIME	5.50	5.50	5.50	5.50	5.50	5.50	5.58	5.
ROUTED TO□	RPT6	17.93	1	FLOW	4692.	4448.	4111.	3769.	3515.	3059.	2574.	218
				TIME	6.08	6.08	6.08	6.08	6.08	6.17	6.17	6.
HYDROGRAPH AT□	D010	10.43	1	FLOW	3045.	2873.	2636.	2397.	2220.	1905.	1573.	130
				TIME	4.50	4.50	4.50	4.50	4.50	4.58	4.58	4.
HYDROGRAPH AT□	D07	4.28	1	FLOW	1249.	1180.	1083.	986.	914.	785.	650.	54
				TIME	4.58	4.58	4.58	4.58	4.58	4.67	4.67	4.
3 COMBINED AT□	PT7	32.65	1	FLOW	8018.	7594.	7008.	6413.	5972.	5180.	4341.	366
				TIME	5.50	5.50	5.50	5.50	5.50	5.58	5.58	5.
ROUTED TO□	RPT7	32.65	1	FLOW	7984.	7562.	6979.	6388.	5950.	5158.	4323.	364
				TIME	5.75	5.75	5.75	5.75	5.75	5.75	5.83	5.

HYDROGRAPH AT□	D012B	.57	1	FLOW	165.	155.	141.	127.	117.	98.	79.	6
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
2 COMBINED AT□	PT8	33.21	1	FLOW	8053.	7625.	7037.	6442.	6000.	5202.	4355.	367
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
DIVERSION TO□	DVPITT	33.21	1	FLOW	4122.	3866.	3516.	3160.	2896.	2442.	1967.	160
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
HYDROGRAPH AT□	DVPITT	33.21	1	FLOW	3931.	3759.	3522.	3282.	3104.	2760.	2387.	207
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
DIVERSION TO□	DVROSE	33.21	1	FLOW	806.	763.	704.	644.	600.	520.	435.	39
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
HYDROGRAPH AT□	DVROSE	33.21	1	FLOW	3125.	2996.	2818.	2638.	2504.	2240.	1952.	168
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
ROUTED TO□	RPT8	33.21	1	FLOW	3105.	2976.	2799.	2620.	2487.	2224.	1938.	166
				TIME	6.17	6.17	6.25	6.25	6.25	6.25	6.25	6.
HYDROGRAPH AT□	D4A	1.87	1	FLOW	918.	864.	791.	717.	662.	564.	460.	37
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
3 COMBINED AT□	PT25A	35.09	1	FLOW	4682.	4461.	4243.	3982.	3783.	3397.	2973.	253
				TIME	5.92	5.92	6.00	6.00	6.00	6.00	6.08	6.
HYDROGRAPH AT□	RDVI153	.00	1	FLOW	9190.	8562.	7702.	6840.	6212.	5088.	4041.	326
				TIME	6.75	6.83	6.83	6.83	6.92	6.92	7.00	7.
ROUTED TO□	RDVI153	.00	1	FLOW	9169.	8543.	7683.	6825.	6197.	5071.	4032.	326
				TIME	6.92	6.92	6.92	7.00	7.00	7.00	7.08	7.
ROUTED TO□	RPT25	.00	1	FLOW	9152.	8527.	7668.	6813.	6184.	5060.	4024.	325
				TIME	7.00	7.00	7.08	7.08	7.08	7.17	7.17	7.
2 COMBINED AT□	PT25B	35.09	1	FLOW	13083.	12296.	11211.	10107.	9275.	7766.	6368.	523
				TIME	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.
HYDROGRAPH AT□	D4B	2.03	1	FLOW	1061.	1003.	923.	842.	782.	674.	560.	46
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
2 COMBINED AT□	PT26	37.12	1	FLOW	13084.	12297.	11212.	10108.	9276.	7767.	6369.	523
				TIME	6.75	6.75	6.75	6.75	6.75	6.75	6.75	6.
ROUTED TO□	RPT26	37.12	1	FLOW	13069.	12283.	11198.	10093.	9263.	7760.	6361.	523
				TIME	6.83	6.83	6.83	6.83	6.83	6.83	6.83	6.
HYDROGRAPH AT□	RDVI154	.00	1	FLOW	1301.	1291.	1277.	1263.	1252.	1232.	1204.	115
				TIME	6.92	6.92	6.92	7.00	7.00	7.08	7.25	7.
ROUTED TO□	RDVI154	.00	1	FLOW	1301.	1291.	1277.	1262.	1252.	1232.	1204.	115
				TIME	6.92	7.00	7.00	7.00	7.00	7.08	7.25	7.
ROUTED TO□	RDVI154	.00	1	FLOW	1301.	1291.	1277.	1262.	1252.	1232.	1204.	115
				TIME	7.00	7.00	7.00	7.00	7.00	7.17	7.25	7.
HYDROGRAPH AT□	RDVI155	.00	1	FLOW	2974.	2815.	2624.	2513.	2416.	2277.	2089.	183

Flow from South of Cactus

Flow @ Southern Crossing of LV Blvd

Flow @ Northern Crossing of LV Blvd

Total Flow From Site

				TIME	6.92	6.92	7.00	7.00	7.00	7.08	7.25	7.
ROUTED TO												
	RDVI155	.00	1	FLOW	2973.	2814.	2624.	2512.	2415.	2277.	2089.	183
				TIME	6.92	7.00	7.00	7.00	7.00	7.17	7.33	7.
ROUTED TO												
	RDVI155	.00	1	FLOW	2973.	2814.	2624.	2512.	2415.	2277.	2089.	183
				TIME	7.00	7.00	7.00	7.00	7.00	7.17	7.33	7.
ROUTED TO												
	RDVI155	.00	1	FLOW	2972.	2814.	2624.	2512.	2415.	2277.	2089.	183
				TIME	7.00	7.00	7.00	7.00	7.08	7.17	7.33	7.
ROUTED TO												
	RDVI155	.00	1	FLOW	2972.	2814.	2624.	2512.	2415.	2277.	2089.	183
				TIME	7.00	7.00	7.00	7.00	7.08	7.17	7.33	7.
2 COMBINED AT												
	PT27	.00	1	FLOW	4273.	4105.	3900.	3774.	3667.	3508.	3292.	298
				TIME	7.00	7.00	7.00	7.00	7.08	7.17	7.33	7.
ROUTED TO												
	RPT27	.00	1	FLOW	4273.	4104.	3900.	3774.	3667.	3508.	3292.	298
				TIME	7.00	7.00	7.00	7.00	7.08	7.17	7.33	7.
ROUTED TO												
	RPT27	.00	1	FLOW	4273.	4104.	3900.	3774.	3666.	3508.	3292.	298
				TIME	7.00	7.00	7.00	7.08	7.08	7.17	7.33	7.
HYDROGRAPH AT												
	B18C	1.26	1	FLOW	445.	419.	384.	349.	324.	278.	231.	19
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.
3 COMBINED AT												
	PT28	38.38	1	FLOW	17333.	16376.	15092.	13857.	12917.	11242.	9593.	806
				TIME	6.83	6.83	6.83	6.83	6.83	6.92	6.92	7.
ROUTED TO												
	LDCDB	38.38	1	FLOW	11547.	11008.	10290.	9585.	9071.	8182.	7226.	632
				TIME	8.33	8.33	8.33	8.25	8.25	8.25	8.17	8.
			**	PEAK STAGES IN FEET **								
			1	STAGE	2219.28	2216.94	2213.83	2210.78	2208.56	2204.71	2200.85	2197.
				TIME	8.33	8.33	8.33	8.25	8.25	8.25	8.17	8.
ROUTED TO												
	RLDCDB	38.38	1	FLOW	11547.	11007.	10290.	9584.	9070.	8181.	7225.	632
				TIME	8.33	8.33	8.33	8.33	8.25	8.25	8.25	8.
HYDROGRAPH AT												
	D5A	1.33	1	FLOW	738.	703.	654.	605.	568.	502.	431.	37
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.
ROUTED TO												
	RD5A	1.33	1	FLOW	702.	669.	623.	575.	540.	477.	409.	35
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.
HYDROGRAPH AT												
	RDVROSE	.00	1	FLOW	806.	763.	704.	644.	600.	520.	435.	39
				TIME	5.67	5.75	5.75	5.75	5.75	5.75	5.75	5.
ROUTED TO												
	RDVROSE	.00	1	FLOW	799.	756.	698.	638.	594.	515.	431.	39
				TIME	6.17	6.17	6.25	6.25	6.25	6.25	6.25	6.
3 COMBINED AT												
	PT29	39.70	1	FLOW	11892.	11343.	10609.	9886.	9358.	8439.	7452.	652
				TIME	8.17	8.17	8.17	8.08	8.08	8.08	8.00	8.
ROUTED TO												
	RPT29	39.70	1	FLOW	11891.	11342.	10609.	9885.	9357.	8439.	7452.	652
				TIME	8.25	8.17	8.17	8.17	8.08	8.08	8.08	8.
HYDROGRAPH AT												
	B16B	.70	1	FLOW	348.	332.	309.	285.	268.	236.	203.	17
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.
ROUTED TO												

	RB16B	.70	1	FLOW	344.	327.	305.	282.	264.	235.	202.	17
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.
COMBINED AT□												
	PT30	40.40	1	FLOW	11891.	11342.	10609.	9885.	9357.	8439.	7452.	652
				TIME	8.25	8.17	8.17	8.17	8.08	8.08	8.08	8.
ROUTED TO□												
	RPT30	40.40	1	FLOW	11891.	11340.	10607.	9885.	9355.	8438.	7452.	652
				TIME	8.25	8.25	8.17	8.17	8.17	8.08	8.08	8.
HYDROGRAPH AT□												
	B16A	.91	1	FLOW	236.	222.	203.	184.	170.	144.	118.	9
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.
HYDROGRAPH AT□												
	D5B	.60	1	FLOW	242.	231.	216.	201.	190.	170.	148.	13
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
3 COMBINED AT□												
	PT31	41.91	1	FLOW	11892.	11341.	10608.	9886.	9356.	8439.	7453.	652
				TIME	8.25	8.25	8.17	8.17	8.08	8.08	8.08	8.
ROUTED TO□												
	RPT31	41.91	1	FLOW	11891.	11340.	10607.	9885.	9356.	8439.	7452.	652
				TIME	8.25	8.25	8.17	8.17	8.17	8.08	8.08	8.
2 COMBINED AT□												
	PT32	143.12	1	FLOW	14470.	13813.	12891.	11920.	11216.	9921.	8447.	724
				TIME	8.08	8.08	8.00	8.00	8.00	8.00	8.08	8.
ROUTED TO□												
	RPT32	143.12	1	FLOW	14469.	13811.	12889.	11918.	11215.	9920.	8445.	724
				TIME	8.08	8.08	8.08	8.00	8.00	8.08	8.08	8.
HYDROGRAPH AT□												
	HYDRO2	.38	1	FLOW	36.	36.	36.	36.	36.	36.	36.	3
				TIME	5.25	5.25	5.25	5.25	5.25	5.25	5.25	5.
[redacted]TED TO□												
	RHYDRO2	.38	1	FLOW	32.	32.	32.	32.	32.	32.	32.	3
				TIME	6.08	6.08	6.08	6.08	6.08	6.08	6.08	6.
HYDROGRAPH AT□												
	B12	.97	1	FLOW	119.	110.	98.	86.	77.	61.	45.	3
				TIME	5.00	5.00	5.08	5.08	5.08	5.08	5.08	5.
2 COMBINED AT□												
	PT33W	1.35	1	FLOW	149.	140.	128.	115.	107.	91.	75.	6
				TIME	5.08	5.08	5.08	5.08	5.08	5.08	5.08	5.
HYDROGRAPH AT□												
	RDVBD7	.00	1	FLOW	918.	873.	812.	751.	705.	626.	542.	48
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.
ROUTED TO□												
	RDVBD7	.00	1	FLOW	879.	836.	777.	718.	674.	597.	516.	45
				TIME	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.
2 COMBINED AT□												
	PT33	1.35	1	FLOW	956.	907.	841.	775.	725.	640.	550.	48
				TIME	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.
ROUTED TO□												
	RPT33	1.35	1	FLOW	929.	881.	815.	750.	702.	618.	530.	46
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.
HYDROGRAPH AT□												
	B15A	.96	1	FLOW	279.	262.	238.	214.	197.	166.	134.	10
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.
2 COMBINED AT□												
	PT34W	2.31	1	FLOW	1103.	1046.	968.	889.	831.	729.	622.	54
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.
[redacted] COMBINED AT□												
	PT34	145.42	1	FLOW	14546.	13888.	12967.	11996.	11293.	9997.	8521.	731
				TIME	8.08	8.08	8.00	8.00	8.00	8.00	8.08	8.

HYDROGRAPH AT□	MNWB	.44	1	FLOW	136.	128.	118.	107.	99.	85.	70.	5
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.
[redacted]TED TO□	RMNWB	.44	1	FLOW	136.	128.	117.	107.	99.	85.	70.	5
				TIME	4.25	4.25	4.25	4.33	4.33	4.33	4.33	4.
HYDROGRAPH AT□	MNWC	.60	1	FLOW	191.	180.	166.	151.	141.	121.	101.	8
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.
2 COMBINED AT□	PT35	1.04	1	FLOW	324.	306.	281.	256.	238.	205.	169.	14
				TIME	4.17	4.25	4.25	4.25	4.25	4.25	4.25	4.
ROUTED TO□	RPT35	1.04	1	FLOW	324.	306.	281.	256.	237.	203.	169.	14
				TIME	4.25	4.25	4.25	4.25	4.25	4.25	4.33	4.
HYDROGRAPH AT□	MNWD	.08	1	FLOW	39.	37.	34.	31.	29.	25.	21.	1
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
2 COMBINED AT□	PT36	1.12	1	FLOW	340.	321.	295.	269.	250.	215.	178.	14
				TIME	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.
ROUTED TO□	RPT36	1.12	1	FLOW	333.	315.	289.	263.	244.	210.	174.	14
				TIME	4.42	4.42	4.42	4.42	4.42	4.50	4.50	4.
HYDROGRAPH AT□	MC2	.92	1	FLOW	218.	206.	190.	173.	161.	140.	118.	10
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.
2 COMBINED AT□	PT37	2.03	1	FLOW	548.	518.	476.	434.	403.	347.	289.	24
				TIME	4.42	4.42	4.42	4.42	4.42	4.42	4.42	4.
[redacted]UTED TO□	RPT37	2.03	1	FLOW	548.	518.	476.	434.	403.	347.	289.	24
				TIME	4.50	4.50	4.50	4.50	4.50	4.50	4.50	4.
HYDROGRAPH AT□	B10A	1.60	1	FLOW	776.	735.	678.	621.	579.	504.	427.	36
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.
2 COMBINED AT□	PT38	3.64	1	FLOW	917.	866.	795.	725.	678.	594.	504.	43
				TIME	3.67	3.67	3.67	3.67	4.83	4.83	4.83	4.
ROUTED TO□	RPT38	3.64	1	FLOW	907.	851.	784.	721.	674.	591.	502.	43
				TIME	3.67	3.67	3.67	4.92	4.92	4.92	4.92	4.
2 COMBINED AT□	PT39	149.06	1	FLOW	14559.	13901.	12983.	12011.	11308.	10011.	8531.	732
				TIME	8.08	8.08	8.00	8.00	8.00	8.00	8.08	8.
ROUTED TO□	RPT39	149.06	1	FLOW	14557.	13899.	12980.	12008.	11307.	10009.	8529.	732
				TIME	8.08	8.08	8.08	8.00	8.00	8.08	8.08	8.
HYDROGRAPH AT□	D6	1.56	1	FLOW	655.	624.	582.	539.	507.	451.	390.	34
				TIME	3.83	3.83	3.92	3.92	3.92	3.92	3.92	3.
2 COMBINED AT□	PT40	150.62	1	FLOW	14557.	13900.	12980.	12008.	11307.	10009.	8530.	732
				TIME	8.08	8.08	8.08	8.00	8.00	8.08	8.08	8.
ROUTED TO□	RPT40	150.62	1	FLOW	14553.	13895.	12975.	12004.	11303.	10005.	8527.	732
				TIME	8.17	8.17	8.17	8.08	8.08	8.17	8.17	8.
[redacted]HYDROGRAPH AT□	D7	.85	1	FLOW	231.	218.	200.	182.	169.	145.	121.	10
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.

2 COMBINED AT□												
	PT41	151.47	1	FLOW	14554.	13896.	12976.	12005.	11304.	10006.	8527.	732
				TIME	8.17	8.17	8.17	8.08	8.08	8.17	8.17	8.
ROUTED TO□												
	RPT41	151.47	1	FLOW	14552.	13894.	12975.	12003.	11301.	10005.	8526.	732
				TIME	8.17	8.17	8.17	8.17	8.08	8.17	8.25	8.
HYDROGRAPH AT□												
	D8	1.26	1	FLOW	661.	627.	581.	534.	500.	439.	374.	32
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.
ROUTED TO□												
	RD8	1.26	1	FLOW	626.	595.	551.	507.	474.	416.	355.	30
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
2 COMBINED AT□												
	PT42	152.73	1	FLOW	14552.	13894.	12975.	12003.	11301.	10005.	8526.	732
				TIME	8.17	8.17	8.17	8.17	8.08	8.17	8.25	8.
ROUTED TO□												
	RPT42	152.73	1	FLOW	14550.	13892.	12974.	12002.	11300.	10004.	8526.	732
				TIME	8.17	8.17	8.17	8.17	8.17	8.17	8.25	8.
HYDROGRAPH AT□												
	B10B	.85	1	FLOW	284.	271.	252.	233.	220.	195.	170.	14
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.
ROUTED TO□												
	RB10B	.85	1	FLOW	270.	257.	239.	221.	208.	185.	161.	14
				TIME	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.
HYDROGRAPH AT□												
	D9A	.86	1	FLOW	133.	124.	112.	100.	92.	77.	63.	5
				TIME	4.67	4.67	4.67	4.67	4.67	4.67	4.67	5.
2 COMBINED AT□												
	PT43	1.71	1	FLOW	402.	381.	351.	321.	300.	262.	223.	19
				TIME	4.58	4.58	4.58	4.58	4.58	4.58	4.58	4.
ROUTED TO□												
	RPT43	1.71	1	FLOW	402.	381.	351.	321.	300.	262.	223.	19
				TIME	4.67	4.67	4.67	4.67	4.67	4.67	4.67	4.
2 COMBINED AT□												
	PT44	154.44	1	FLOW	14563.	13905.	12986.	12013.	11310.	10013.	8532.	732
				TIME	8.17	8.17	8.17	8.17	8.17	8.17	8.25	8.
ROUTED TO□												
	RPT44	154.44	1	FLOW	14554.	13895.	12975.	12004.	11301.	10002.	8526.	732
				TIME	8.33	8.33	8.25	8.25	8.25	8.25	8.33	8.
HYDROGRAPH AT□												
	D9B	1.54	1	FLOW	518.	487.	445.	402.	371.	316.	258.	21
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.
2 COMBINED AT□												
	PT45	155.99	1	FLOW	14554.	13895.	12975.	12004.	11301.	10002.	8526.	732
				TIME	8.33	8.33	8.25	8.25	8.25	8.25	8.33	8.
ROUTED TO□												
	RPT45	155.99	1	FLOW	14544.	13885.	12961.	11991.	11289.	9993.	8517.	731
				TIME	8.50	8.50	8.42	8.42	8.42	8.50	8.50	8.
HYDROGRAPH AT□												
	D10	2.51	1	FLOW	1032.	980.	908.	836.	783.	687.	586.	50
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.
2 COMBINED AT□												
	PT46	158.49	1	FLOW	14544.	13885.	12961.	11991.	11289.	9993.	8517.	731
				TIME	8.50	8.50	8.42	8.42	8.42	8.50	8.50	8.
ROUTED TO□												
	RPT46	158.49	1	FLOW	14543.	13883.	12960.	11989.	11287.	9992.	8516.	731
				TIME	8.50	8.50	8.50	8.50	8.50	8.50	8.58	8.
HYDROGRAPH AT□												
	MC	2.80	1	FLOW	1911.	1824.	1704.	1582.	1490.	1323.	1142.	99

				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
DIVERSION TO□												
	TORAW	2.80	1	FLOW	382.	365.	341.	316.	298.	265.	228.	19
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
HYDROGRAPH AT□												
	TORAW	2.80	1	FLOW	1528.	1459.	1364.	1265.	1192.	1058.	913.	79
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
ROUTED TO□												
	MCDB	2.80	1	FLOW	76.	75.	72.	69.	67.	63.	59.	5
				TIME	5.67	5.67	5.67	5.67	5.67	5.58	5.58	5.
			**	PEAK STAGES IN FEET **								
			1	STAGE	11.05	10.55	9.85	9.14	8.61	7.68	6.71	5.
				TIME	5.67	5.67	5.67	5.67	5.67	5.58	5.58	5.
ROUTED TO□												
	RMCDB	2.80	1	FLOW	76.	75.	72.	69.	67.	63.	59.	5
				TIME	5.75	5.75	5.75	5.75	5.75	5.67	5.67	5.
HYDROGRAPH AT□												
	RTORAW	.00	1	FLOW	382.	365.	341.	316.	298.	265.	228.	19
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
2 COMBINED AT□												
	PT47	2.80	1	FLOW	430.	411.	384.	357.	338.	302.	264.	23
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.
ROUTED TO□												
	RPT47	2.80	1	FLOW	434.	414.	386.	358.	337.	302.	266.	23
				TIME	3.83	3.83	3.83	3.83	3.83	3.92	3.92	3.
HYDROGRAPH AT□												
	RH	1.36	1	FLOW	288.	263.	231.	199.	176.	136.	107.	8
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	5.00	5.
2 COMBINED AT□												
	PT48W	4.16	1	FLOW	712.	669.	611.	552.	509.	433.	360.	30
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92	3.
HYDROGRAPH AT□												
	B20	.79	1	FLOW	228.	215.	197.	178.	165.	140.	115.	9
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.17	4.
ROUTED TO□												
	RB20	.79	1	FLOW	227.	214.	196.	178.	164.	140.	115.	9
				TIME	4.17	4.17	4.25	4.25	4.25	4.25	4.25	4.
3 COMBINED AT□												
	PT48	163.44	1	FLOW	14617.	13955.	13030.	12056.	11352.	10052.	8572.	736
				TIME	8.50	8.50	8.50	8.50	8.50	8.50	8.58	8.
ROUTED TO□												
	RPT48	163.44	1	FLOW	14614.	13952.	13026.	12054.	11350.	10049.	8569.	736
				TIME	8.58	8.58	8.50	8.50	8.50	8.58	8.58	8.
HYDROGRAPH AT□												
	D12	.18	1	FLOW	39.	36.	33.	29.	26.	22.	17.	1
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.25	4.
ROUTED TO□												
	RD12	.18	1	FLOW	39.	36.	33.	29.	26.	22.	17.	1
				TIME	4.42	4.42	4.50	4.50	4.50	4.50	4.58	4.
HYDROGRAPH AT□												
	D11A	.16	1	FLOW	67.	63.	56.	50.	46.	37.	29.	2
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.
2 COMBINED AT□												
	PT49	.33	1	FLOW	72.	68.	62.	56.	52.	44.	36.	3
				TIME	4.83	4.83	4.83	4.83	4.83	4.83	4.83	4.
ROUTED TO□												
	RPT49	.33	1	FLOW	71.	67.	61.	55.	51.	44.	36.	2
				TIME	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.
2 COMBINED AT□												

	PT50	163.78	1	FLOW	14615.	13953.	13027.	12055.	11351.	10050.	8570.	736
				TIME	8.58	8.58	8.50	8.50	8.50	8.58	8.58	8.
TED TO												
	RPT50	163.78	1	FLOW	14610.	13949.	13024.	12052.	11350.	10049.	8570.	736
				TIME	8.58	8.58	8.58	8.58	8.58	8.67	8.67	8.
HYDROGRAPH AT												
	D11B	.99	1	FLOW	504.	476.	437.	397.	368.	316.	261.	21
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.
2 COMBINED AT												
	PT51	164.76	1	FLOW	14610.	13949.	13024.	12052.	11350.	10049.	8570.	736
				TIME	8.58	8.58	8.58	8.58	8.58	8.67	8.67	8.

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.57	513.74	306.00	.66	5.00	513.39	305.00	.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9296E+02 EXCESS= .0000E+00 OUTFLOW= .9298E+02 BASIN STORAGE= .3577E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.66	483.39	303.03	.62	5.00	483.38	305.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8677E+02 EXCESS= .0000E+00 OUTFLOW= .8679E+02 BASIN STORAGE= .4353E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.81	442.44	307.67	.56	5.00	442.12	305.00	.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7833E+02 EXCESS= .0000E+00 OUTFLOW= .7836E+02 BASIN STORAGE= .3619E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.98	400.54	308.48	.50	5.00	400.28	305.00	.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6987E+02 EXCESS= .0000E+00 OUTFLOW= .6990E+02 BASIN STORAGE= .3813E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	5.00	369.94	305.00	.45	5.00	369.94	305.00	.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6367E+02 EXCESS= .0000E+00 OUTFLOW= .6370E+02 BASIN STORAGE= .3740E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.75	313.26	308.75	.37	5.00	312.61	310.00	.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5263E+02 EXCESS= .0000E+00 OUTFLOW= .5266E+02 BASIN STORAGE= .3643E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	4.25	252.88	310.25	.29	5.00	252.85	310.00	.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4109E+02 EXCESS= .0000E+00 OUTFLOW= .4112E+02 BASIN STORAGE= .3370E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT2	MANE	3.75	204.53	311.25	.23	5.00	204.46	310.00	.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3200E+02 EXCESS= .0000E+00 OUTFLOW= .3202E+02 BASIN STORAGE= .3489E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT3A	MANE	2.38	776.46	308.81	.52	5.00	773.44	310.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1299E+03 EXCESS= .0000E+00 OUTFLOW= .1299E+03 BASIN STORAGE= .2096E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00									
RPT3A	MANE	2.43	724.62	308.93	.48	5.00	721.99	310.00	.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1191E+03 EXCESS= .0000E+00 OUTFLOW= .1191E+03 BASIN STORAGE= .2715E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.52	653.94	307.53	.42	5.00	653.06	310.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1044E+03 EXCESS= .0000E+00 OUTFLOW= .1044E+03 BASIN STORAGE= .2081E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.50	581.15	307.50	.36	5.00	581.10	310.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8961E+02 EXCESS= .0000E+00 OUTFLOW= .8964E+02 BASIN STORAGE= .2347E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.71	527.57	309.35	.32	5.00	526.42	310.00	.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7893E+02 EXCESS= .0000E+00 OUTFLOW= .7895E+02 BASIN STORAGE= .2328E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.50	429.06	310.00	.24	5.00	429.06	310.00	.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5990E+02 EXCESS= .0000E+00 OUTFLOW= .5993E+02 BASIN STORAGE= .2076E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.25	322.16	310.50	.16	5.00	322.01	310.00	.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4055E+02 EXCESS= .0000E+00 OUTFLOW= .4055E+02 BASIN STORAGE= .2685E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT3A	MANE	2.25	236.32	310.50	.11	5.00	236.02	310.00	.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2605E+02 EXCESS= .0000E+00 OUTFLOW= .2607E+02 BASIN STORAGE= .2439E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.48	2260.12	306.05	1.02	5.00	2260.09	305.00	1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5551E+03 EXCESS= .0000E+00 OUTFLOW= .5550E+03 BASIN STORAGE= .2618E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.51	2129.13	307.49	.96	5.00	2128.77	305.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5217E+03 EXCESS= .0000E+00 OUTFLOW= .5215E+03 BASIN STORAGE= .2548E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.55	1950.06	311.70	.87	5.00	1949.96	310.00	.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4759E+03 EXCESS= .0000E+00 OUTFLOW= .4758E+03 BASIN STORAGE= .2423E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.60	1770.40	313.61	.79	5.00	1770.34	315.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4301E+03 EXCESS= .0000E+00 OUTFLOW= .4299E+03 BASIN STORAGE= .2303E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.64	1638.72	316.61	.73	5.00	1638.61	315.00	.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3964E+03 EXCESS= .0000E+00 OUTFLOW= .3963E+03 BASIN STORAGE= .2197E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.73	1403.14	317.41	.62	5.00	1402.58	320.00	.62

TINUITY SUMMARY (AC-FT) - INFLOW= .3367E+03 EXCESS= .0000E+00 OUTFLOW= .3366E+03 BASIN STORAGE= .2025E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.84	1156.79	321.31	.50	5.00	1156.42	320.00	.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2747E+03 EXCESS= .0000E+00 OUTFLOW= .2746E+03 BASIN STORAGE= .1777E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD012A	MANE	1.95	961.15	323.63	.41	5.00	961.12	325.00	.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2259E+03 EXCESS= .0000E+00 OUTFLOW= .2258E+03 BASIN STORAGE= .1608E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.64	1301.16	417.91	-1.00	5.00	1301.12	415.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.65	1290.94	419.04	-1.00	5.00	1290.91	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.66	1276.77	420.64	-1.00	5.00	1276.77	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.67	1262.48	419.60	-1.00	5.00	1262.47	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.68	1251.97	420.81	-1.00	5.00	1251.93	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.70	1231.74	425.87	-1.00	5.00	1231.69	425.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.72	1203.64	434.70	-1.00	5.00	1203.64	435.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	2.76	1151.04	441.44	-1.00	5.00	1151.02	440.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	.79	1301.12	416.32	-1.00	5.00	1301.10	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	.80	1290.90	420.03	-1.00	5.00	1290.90	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	.80	1276.75	420.29	-1.00	5.00	1276.74	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RDVI154	MANE	.80	1262.46	420.57	-1.00	5.00	1262.44	420.00	-1.00

FOR PLAN = 1 RATIO= .00
RDVI154 MANE .81 1251.93 421.18 -1.00 5.00 1251.88 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI154 MANE .81 1231.69 426.37 -1.00 5.00 1231.65 430.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI154 MANE .82 1203.62 436.05 -1.00 5.00 1203.56 435.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI154 MANE .83 1150.99 440.58 -1.00 5.00 1150.96 440.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.46 2973.79 417.19 -1.00 5.00 2972.91 415.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.49 2814.95 416.92 -1.00 5.00 2814.29 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.52 2624.17 420.02 -1.00 5.00 2624.17 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.54 2512.50 421.09 -1.00 5.00 2512.35 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.56 2415.66 421.58 -1.00 5.00 2415.27 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.59 2277.15 427.79 -1.00 5.00 2277.06 430.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.63 2089.31 437.73 -1.00 5.00 2088.92 440.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE 1.70 1836.00 442.03 -1.00 5.00 1835.04 440.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .81 2972.91 416.28 -1.00 5.00 2972.50 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .83 2814.18 419.71 -1.00 5.00 2814.15 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .85 2624.07 420.56 -1.00 5.00 2624.01 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .87 2512.26 421.01 -1.00 5.00 2512.07 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .88 2415.22 421.54 -1.00 5.00 2414.85 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .90 2276.98 430.70 -1.00 5.00 2276.94 430.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .93 2088.90 439.29 -1.00 5.00 2088.88 440.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .98 1835.04 441.05 -1.00 5.00 1834.57 445.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .53 2972.46 420.02 -1.00 5.00 2972.46 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .54 2814.01 420.20 -1.00 5.00 2813.98 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .55 2623.93 420.53 -1.00 5.00 2623.89 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .56 2512.01 420.63 -1.00 5.00 2511.85 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .57 2414.86 421.04 -1.00 5.00 2414.81 425.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .58 2276.87 430.48 -1.00 5.00 2276.83 430.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .60 2088.83 440.14 -1.00 5.00 2088.82 440.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .64 1834.49 445.13 -1.00 5.00 1834.48 445.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .55 2972.36 420.09 -1.00 5.00 2972.34 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .56 2813.84 420.39 -1.00 5.00 2813.77 420.00 -1.00

FOR PLAN = 1 RATIO= .00
RDVI155 MANE .58 2623.81 420.73 -1.00 5.00 2623.72 420.00 -1.00

FOR PLAN = 1 RATIO= .00

RDVI155	MANE	.59	2511.79	421.06	-1.00	5.00	2511.59	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RDVI155	MANE	.60	2414.77	424.75	-1.00	5.00	2414.76	425.00	-1.00
FOR PLAN = 1 RATIO= .00									
RDVI155	MANE	.61	2276.79	430.57	-1.00	5.00	2276.70	430.00	-1.00
FOR PLAN = 1 RATIO= .00									
RDVI155	MANE	.63	2088.75	440.60	-1.00	5.00	2088.74	440.00	-1.00
FOR PLAN = 1 RATIO= .00									
RDVI155	MANE	.67	1834.34	445.36	-1.00	5.00	1834.32	445.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.67	4273.25	420.32	-1.00	5.00	4273.21	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.68	4104.46	420.37	-1.00	5.00	4104.33	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.69	3900.40	420.73	-1.00	5.00	3900.24	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.70	3774.00	420.70	-1.00	5.00	3773.67	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.71	3666.57	424.88	-1.00	5.00	3666.56	425.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.72	3508.24	431.00	-1.00	5.00	3508.14	430.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.74	3292.01	440.63	-1.00	5.00	3292.00	440.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.77	2984.76	445.15	-1.00	5.00	2984.73	445.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.31	4273.08	420.08	-1.00	5.00	4273.06	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.32	4104.16	420.20	-1.00	5.00	4104.12	420.00	-1.00
FOR PLAN = 1 RATIO= .00									
RPT27	MANE	.33	3900.15	420.38	-1.00	5.00	3900.09	420.00	-1.00

FOR PLAN = 1 RATIO= .00

RPT27	MANE	.33	3773.64	421.02	-1.00	5.00	3773.57	425.00	-1.00

FOR PLAN = 1 RATIO= .00

RPT27	MANE	.33	3666.49	424.90	-1.00	5.00	3666.49	425.00	-1.00

FOR PLAN = 1 RATIO= .00

RPT27	MANE	.34	3508.06	430.42	-1.00	5.00	3508.02	430.00	-1.00

FOR PLAN = 1 RATIO= .00

RPT27	MANE	.35	3291.91	440.13	-1.00	5.00	3291.90	440.00	-1.00

FOR PLAN = 1 RATIO= .00

RPT27	MANE	.36	2984.60	445.02	-1.00	5.00	2984.59	445.00	-1.00

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.64	11546.51	500.36	2.11	5.00	11546.51	500.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4341E+04 EXCESS= .0000E+00 OUTFLOW= .4331E+04 BASIN STORAGE= .1129E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.65	11007.49	500.18	2.01	5.00	11007.46	500.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4133E+04 EXCESS= .0000E+00 OUTFLOW= .4123E+04 BASIN STORAGE= .1097E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.67	10289.53	499.48	1.88	5.00	10289.50	500.00	1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3864E+04 EXCESS= .0000E+00 OUTFLOW= .3855E+04 BASIN STORAGE= .1051E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.68	9584.50	496.33	1.75	5.00	9583.94	500.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3592E+04 EXCESS= .0000E+00 OUTFLOW= .3584E+04 BASIN STORAGE= .1005E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.70	9070.50	496.07	1.65	5.00	9069.83	495.00	1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+04 EXCESS= .0000E+00 OUTFLOW= .3379E+04 BASIN STORAGE= .9691E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.73	8181.38	495.75	1.47	5.00	8181.08	495.00	1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3020E+04 EXCESS= .0000E+00 OUTFLOW= .3012E+04 BASIN STORAGE= .8958E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.76	7225.62	491.71	1.27	5.00	7225.43	495.00	1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2608E+04 EXCESS= .0000E+00 OUTFLOW= .2602E+04 BASIN STORAGE= .8073E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RLDCDB	MANE	.80	6326.03	490.14	1.09	5.00	6325.99	490.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2242E+04 EXCESS= .0000E+00 OUTFLOW= .2236E+04 BASIN STORAGE= .7203E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.75	11892.36	491.07	2.19	5.00	11890.97	495.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4661E+04 EXCESS= .0000E+00 OUTFLOW= .4648E+04 BASIN STORAGE= .1351E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.77	11342.60	491.31	2.09	5.00	11341.75	490.00	2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4439E+04 EXCESS= .0000E+00 OUTFLOW= .4426E+04 BASIN STORAGE= .1313E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.78	10609.02	490.27	1.95	5.00	10608.84	490.00	1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4142E+04 EXCESS= .0000E+00 OUTFLOW= .4130E+04 BASIN STORAGE= .1258E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.81	9885.72	486.34	1.81	5.00	9884.97	490.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3842E+04 EXCESS= .0000E+00 OUTFLOW= .3831E+04 BASIN STORAGE= .1204E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.82	9357.33	485.63	1.71	5.00	9356.84	485.00	1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3632E+04 EXCESS= .0000E+00 OUTFLOW= .3621E+04 BASIN STORAGE= .1160E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.85	8438.53	484.92	1.52	5.00	8438.53	485.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3228E+04 EXCESS= .0000E+00 OUTFLOW= .3218E+04 BASIN STORAGE= .1074E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.89	7452.13	481.81	1.31	5.00	7451.73	485.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2789E+04 EXCESS= .0000E+00 OUTFLOW= .2780E+04 BASIN STORAGE= .9676E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT29	MANE	.94	6527.45	480.65	1.13	5.00	6527.02	480.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2397E+04 EXCESS= .0000E+00 OUTFLOW= .2389E+04 BASIN STORAGE= .8649E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	4.00	347.01	228.00	1.36	5.00	343.73	230.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5087E+02 EXCESS= .0000E+00 OUTFLOW= .5088E+02 BASIN STORAGE= .1161E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	4.00	330.25	228.00	1.30	5.00	327.28	230.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4851E+02 EXCESS= .0000E+00 OUTFLOW= .4852E+02 BASIN STORAGE= .1127E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	4.00	307.12	228.00	1.21	5.00	304.56	230.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4526E+02 EXCESS= .0000E+00 OUTFLOW= .4527E+02 BASIN STORAGE= .1078E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	4.00	283.68	228.00	1.12	5.00	281.52	230.00	1.12

TINUITY SUMMARY (AC-FT) - INFLOW= .4197E+02 EXCESS= .0000E+00 OUTFLOW= .4198E+02 BASIN STORAGE= .1028E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	4.00	266.30	228.00	1.06	5.00	264.43	230.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3954E+02 EXCESS= .0000E+00 OUTFLOW= .3955E+02 BASIN STORAGE= .1524E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	3.75	235.20	228.75	.94	5.00	234.66	230.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3516E+02 EXCESS= .0000E+00 OUTFLOW= .3517E+02 BASIN STORAGE= .1424E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	3.75	201.89	228.75	.82	5.00	201.66	230.00	.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3054E+02 EXCESS= .0000E+00 OUTFLOW= .3054E+02 BASIN STORAGE= .1302E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB16B	MANE	3.75	174.98	228.75	.72	5.00	174.98	230.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2682E+02 EXCESS= .0000E+00 OUTFLOW= .2682E+02 BASIN STORAGE= .1154E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.62	11891.10	493.19	2.16	5.00	11890.65	495.00	2.17

TINUITY SUMMARY (AC-FT) - INFLOW= .4686E+04 EXCESS= .0000E+00 OUTFLOW= .4659E+04 BASIN STORAGE= .2782E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.64	11341.23	492.55	2.06	5.00	11339.68	495.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4477E+04 EXCESS= .0000E+00 OUTFLOW= .4451E+04 BASIN STORAGE= .2693E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.68	10608.14	491.52	1.92	5.00	10607.12	490.00	1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4172E+04 EXCESS= .0000E+00 OUTFLOW= .4147E+04 BASIN STORAGE= .2575E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.72	9884.83	489.10	1.78	5.00	9884.64	490.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3873E+04 EXCESS= .0000E+00 OUTFLOW= .3850E+04 BASIN STORAGE= .2455E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.75	9356.44	487.35	1.68	5.00	9355.11	490.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3654E+04 EXCESS= .0000E+00 OUTFLOW= .3632E+04 BASIN STORAGE= .2360E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.81	8437.96	485.78	1.50	5.00	8437.83	485.00	1.50

NTINUITY SUMMARY (AC-FT) - INFLOW= .3257E+04 EXCESS= .0000E+00 OUTFLOW= .3236E+04 BASIN STORAGE= .2172E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.88	7451.61	484.96	1.29	5.00	7451.60	485.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2811E+04 EXCESS= .0000E+00 OUTFLOW= .2793E+04 BASIN STORAGE= .1945E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT30	MANE	1.96	6526.70	482.57	1.11	5.00	6525.77	485.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2420E+04 EXCESS= .0000E+00 OUTFLOW= .2403E+04 BASIN STORAGE= .1725E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	.96	11891.27	495.39	2.12	5.00	11891.07	495.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4759E+04 EXCESS= .0000E+00 OUTFLOW= .4743E+04 BASIN STORAGE= .1683E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	.97	11340.54	494.70	2.02	5.00	11340.49	495.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4533E+04 EXCESS= .0000E+00 OUTFLOW= .4518E+04 BASIN STORAGE= .1631E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.00	10608.29	491.14	1.89	5.00	10606.96	490.00	1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4238E+04 EXCESS= .0000E+00 OUTFLOW= .4224E+04 BASIN STORAGE= .1560E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.02	9885.57	490.85	1.75	5.00	9885.32	490.00	1.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3937E+04 EXCESS= .0000E+00 OUTFLOW= .3923E+04 BASIN STORAGE= .1489E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.04	9356.43	486.63	1.65	5.00	9356.24	490.00	1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3710E+04 EXCESS= .0000E+00 OUTFLOW= .3697E+04 BASIN STORAGE= .1433E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.08	8438.89	485.73	1.47	5.00	8438.53	485.00	1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3301E+04 EXCESS= .0000E+00 OUTFLOW= .3288E+04 BASIN STORAGE= .1323E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.12	7452.43	485.40	1.27	5.00	7452.31	485.00	1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2849E+04 EXCESS= .0000E+00 OUTFLOW= .2837E+04 BASIN STORAGE= .1189E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT31	MANE	1.18	6526.73	481.99	1.09	5.00	6526.66	485.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2453E+04 EXCESS= .0000E+00 OUTFLOW= .2443E+04 BASIN STORAGE= .1058E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.27	14469.61	486.25	.76	5.00	14468.71	485.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5851E+04 EXCESS= .0000E+00 OUTFLOW= .5827E+04 BASIN STORAGE= .2655E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.29	13811.99	485.75	.72	5.00	13811.33	485.00	.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5560E+04 EXCESS= .0000E+00 OUTFLOW= .5536E+04 BASIN STORAGE= .2571E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.33	12890.95	481.24	.67	5.00	12889.14	485.00	.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5150E+04 EXCESS= .0000E+00 OUTFLOW= .5128E+04 BASIN STORAGE= .2458E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.37	11919.46	481.92	.62	5.00	11917.91	480.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4740E+04 EXCESS= .0000E+00 OUTFLOW= .4719E+04 BASIN STORAGE= .2344E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.40	11215.25	480.47	.58	5.00	11214.61	480.00	.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4452E+04 EXCESS= .0000E+00 OUTFLOW= .4431E+04 BASIN STORAGE= .2253E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.46	9921.06	482.58	.51	5.00	9919.80	485.00	.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3893E+04 EXCESS= .0000E+00 OUTFLOW= .3873E+04 BASIN STORAGE= .2088E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.55	8446.42	486.16	.43	5.00	8445.10	485.00	.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3314E+04 EXCESS= .0000E+00 OUTFLOW= .3297E+04 BASIN STORAGE= .1880E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT32	MANE	1.65	7241.15	485.41	.37	5.00	7241.11	485.00	.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2824E+04 EXCESS= .0000E+00 OUTFLOW= .2809E+04 BASIN STORAGE= .1689E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMNWB	MANE	5.00	135.71	255.00	1.05	5.00	135.71	255.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2476E+02 EXCESS= .0000E+00 OUTFLOW= .2477E+02 BASIN STORAGE= .2236E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMNWB	MANE	5.00	127.98	255.00	.99	5.00	127.98	255.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2335E+02 EXCESS= .0000E+00 OUTFLOW= .2335E+02 BASIN STORAGE= .2167E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMNWB	MANE	5.00	117.32	255.00	.91	5.00	117.32	255.00	.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2141E+02 EXCESS= .0000E+00 OUTFLOW= .2141E+02 BASIN STORAGE= .1994E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMNWB	MANE	5.00	106.60	260.00	.83	5.00	106.60	260.00	.83

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1946E+02 EXCESS= .0000E+00 OUTFLOW= .1946E+02 BASIN STORAGE= .1895E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMNWB	MANE	5.00	98.79	260.00	.76	5.00	98.79	260.00	.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1802E+02 EXCESS= .0000E+00 OUTFLOW= .1802E+02 BASIN STORAGE= .1820E-02 PERCENT ERR

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 FOR PLAN = 1  RATIO=  .00
    RMNWB  MANE          5.00     84.74    260.00       .66       5.00     84.74    260.00         .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1546E+02 EXCESS= .0000E+00 OUTFLOW= .1546E+02 BASIN STORAGE= .2188E-02 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RMNWB  MANE          5.00     69.85    260.00       .54       5.00     69.85    260.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1279E+02 EXCESS= .0000E+00 OUTFLOW= .1279E+02 BASIN STORAGE= .2061E-02 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RMNWB  MANE          5.00     57.90    260.00       .45       5.00     57.90    260.00         .45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1067E+02 EXCESS= .0000E+00 OUTFLOW= .1067E+02 BASIN STORAGE= .1794E-02 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    547.98    270.00      1.07       5.00    547.98    270.00        1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1157E+03 EXCESS= .0000E+00 OUTFLOW= .1157E+03 BASIN STORAGE= .1818E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    517.61    270.00      1.01       5.00    517.61    270.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1095E+03 EXCESS= .0000E+00 OUTFLOW= .1095E+03 BASIN STORAGE= .1764E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    475.85    270.00       .93       5.00    475.85    270.00         .93

NTINUITY SUMMARY (AC-FT) - INFLOW= .1011E+03 EXCESS= .0000E+00 OUTFLOW= .1011E+03 BASIN STORAGE= .1686E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    433.76    270.00       .85       5.00    433.76    270.00         .85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9263E+02 EXCESS= .0000E+00 OUTFLOW= .9265E+02 BASIN STORAGE= .1606E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    402.79    270.00       .80       5.00    402.79    270.00         .80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8641E+02 EXCESS= .0000E+00 OUTFLOW= .8642E+02 BASIN STORAGE= .1736E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    347.36    270.00       .69       5.00    347.36    270.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7533E+02 EXCESS= .0000E+00 OUTFLOW= .7534E+02 BASIN STORAGE= .1608E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    289.36    270.00       .59       5.00    289.36    270.00         .59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6377E+02 EXCESS= .0000E+00 OUTFLOW= .6378E+02 BASIN STORAGE= .1563E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
    RPT37  MANE          5.00    243.42    270.00       .50       5.00    243.42    270.00         .50

NTINUITY SUMMARY (AC-FT) - INFLOW= .5462E+02 EXCESS= .0000E+00 OUTFLOW= .5463E+02 BASIN STORAGE= .1433E-01 PERCENT ERR

 FOR PLAN = 1  RATIO=  .00
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RPT38 MANE 3.39 909.98 220.30 1.08 5.00 906.65 220.00 1.08

TINUITY SUMMARY (AC-FT) - INFLOW= .2098E+03 EXCESS= .0000E+00 OUTFLOW= .2098E+03 BASIN STORAGE= .1834E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.46 856.55 221.16 1.03 5.00 850.67 220.00 1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1991E+03 EXCESS= .0000E+00 OUTFLOW= .1991E+03 BASIN STORAGE= .1739E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.50 788.85 220.50 .95 5.00 783.82 220.00 .95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1844E+03 EXCESS= .0000E+00 OUTFLOW= .1844E+03 BASIN STORAGE= .1786E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.50 722.86 294.00 .87 5.00 720.89 295.00 .87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1697E+03 EXCESS= .0000E+00 OUTFLOW= .1697E+03 BASIN STORAGE= .1704E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.50 676.04 294.00 .82 5.00 674.37 295.00 .82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1589E+03 EXCESS= .0000E+00 OUTFLOW= .1589E+03 BASIN STORAGE= .1958E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.50 591.67 294.00 .72 5.00 590.55 295.00 .72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1396E+03 EXCESS= .0000E+00 OUTFLOW= .1396E+03 BASIN STORAGE= .1823E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.50 502.39 294.00 .62 5.00 501.80 295.00 .62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1196E+03 EXCESS= .0000E+00 OUTFLOW= .1195E+03 BASIN STORAGE= .1762E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT38 MANE 3.75 430.65 296.25 .53 5.00 429.53 295.00 .53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1037E+03 EXCESS= .0000E+00 OUTFLOW= .1036E+03 BASIN STORAGE= .1753E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT39 MANE 1.83 14557.38 485.61 .78 5.00 14556.94 485.00 .78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6268E+04 EXCESS= .0000E+00 OUTFLOW= .6232E+04 BASIN STORAGE= .3875E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT39 MANE 1.86 13899.61 486.64 .74 5.00 13899.41 485.00 .75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5969E+04 EXCESS= .0000E+00 OUTFLOW= .5934E+04 BASIN STORAGE= .3748E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT39 MANE 1.91 12981.92 482.05 .69 5.00 12979.80 485.00 .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5534E+04 EXCESS= .0000E+00 OUTFLOW= .5501E+04 BASIN STORAGE= .3584E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00
RPT39 MANE 1.97 12009.67 482.51 .63 5.00 12008.09 480.00 .64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5092E+04 EXCESS= .0000E+00 OUTFLOW= .5060E+04 BASIN STORAGE= .3419E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT39	MANE	2.01	11307.11	481.45	.59	5.00	11306.70	480.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4762E+04 EXCESS= .0000E+00 OUTFLOW= .4731E+04 BASIN STORAGE= .3292E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT39	MANE	2.11	10009.85	482.86	.52	5.00	10008.78	485.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4182E+04 EXCESS= .0000E+00 OUTFLOW= .4154E+04 BASIN STORAGE= .3049E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT39	MANE	2.24	8530.20	488.04	.44	5.00	8529.41	485.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3541E+04 EXCESS= .0000E+00 OUTFLOW= .3515E+04 BASIN STORAGE= .2759E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT39	MANE	2.37	7326.15	483.51	.38	5.00	7325.95	485.00	.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3043E+04 EXCESS= .0000E+00 OUTFLOW= .3020E+04 BASIN STORAGE= .2476E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.66	14552.93	490.88	.78	5.00	14551.94	490.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6320E+04 EXCESS= .0000E+00 OUTFLOW= .6286E+04 BASIN STORAGE= .3679E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.70	13895.47	491.57	.74	5.00	13894.21	490.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6017E+04 EXCESS= .0000E+00 OUTFLOW= .5984E+04 BASIN STORAGE= .3563E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.74	12975.73	487.81	.68	5.00	12975.31	490.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5564E+04 EXCESS= .0000E+00 OUTFLOW= .5533E+04 BASIN STORAGE= .3418E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.80	12004.91	487.04	.63	5.00	12002.93	490.00	.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5131E+04 EXCESS= .0000E+00 OUTFLOW= .5102E+04 BASIN STORAGE= .3260E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.84	11302.50	487.87	.59	5.00	11300.76	485.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4802E+04 EXCESS= .0000E+00 OUTFLOW= .4773E+04 BASIN STORAGE= .3145E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	1.93	10005.70	489.07	.52	5.00	10005.32	490.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4200E+04 EXCESS= .0000E+00 OUTFLOW= .4173E+04 BASIN STORAGE= .2927E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	2.06	8527.25	492.51	.44	5.00	8526.27	495.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3570E+04 EXCESS= .0000E+00 OUTFLOW= .3545E+04 BASIN STORAGE= .2662E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT41	MANE	2.19	7323.83	490.55	.37	5.00	7323.70	490.00	.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3057E+04 EXCESS= .0000E+00 OUTFLOW= .3035E+04 BASIN STORAGE= .2411E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.36	14551.66	491.64	.78	5.00	14549.53	490.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6379E+04 EXCESS= .0000E+00 OUTFLOW= .6352E+04 BASIN STORAGE= .2840E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.38	13893.92	491.34	.74	5.00	13891.92	490.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6057E+04 EXCESS= .0000E+00 OUTFLOW= .6032E+04 BASIN STORAGE= .2744E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.41	12974.48	490.47	.68	5.00	12974.05	490.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5597E+04 EXCESS= .0000E+00 OUTFLOW= .5572E+04 BASIN STORAGE= .2627E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.45	12002.46	490.89	.63	5.00	12002.28	490.00	.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5155E+04 EXCESS= .0000E+00 OUTFLOW= .5131E+04 BASIN STORAGE= .2495E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.48	11300.88	487.96	.59	5.00	11299.81	490.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4835E+04 EXCESS= .0000E+00 OUTFLOW= .4813E+04 BASIN STORAGE= .2396E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.55	10004.39	490.53	.52	5.00	10004.02	490.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4236E+04 EXCESS= .0000E+00 OUTFLOW= .4215E+04 BASIN STORAGE= .2217E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.64	8525.75	495.73	.44	5.00	8525.73	495.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3596E+04 EXCESS= .0000E+00 OUTFLOW= .3577E+04 BASIN STORAGE= .2002E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT42	MANE	1.73	7323.54	491.64	.37	5.00	7322.41	490.00	.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3075E+04 EXCESS= .0000E+00 OUTFLOW= .3058E+04 BASIN STORAGE= .1800E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	402.37	280.00	1.03	5.00	402.37	280.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9403E+02 EXCESS= .0000E+00 OUTFLOW= .9402E+02 BASIN STORAGE= .3309E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	380.62	280.00	.98	5.00	380.62	280.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8937E+02 EXCESS= .0000E+00 OUTFLOW= .8937E+02 BASIN STORAGE= .3173E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	350.95	280.00	.91	5.00	350.95	280.00	.91

TINUITY SUMMARY (AC-FT) - INFLOW= .8301E+02 EXCESS= .0000E+00 OUTFLOW= .8301E+02 BASIN STORAGE= .2982E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	321.35	280.00	.84	5.00	321.35	280.00	.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7665E+02 EXCESS= .0000E+00 OUTFLOW= .7665E+02 BASIN STORAGE= .2786E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	299.78	280.00	.79	5.00	299.78	280.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7200E+02 EXCESS= .0000E+00 OUTFLOW= .7199E+02 BASIN STORAGE= .2638E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	261.81	280.00	.70	5.00	261.81	280.00	.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6373E+02 EXCESS= .0000E+00 OUTFLOW= .6373E+02 BASIN STORAGE= .2365E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	223.06	280.00	.61	5.00	223.06	280.00	.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5515E+02 EXCESS= .0000E+00 OUTFLOW= .5515E+02 BASIN STORAGE= .2066E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT43	MANE	5.00	193.25	280.00	.53	5.00	193.25	280.00	.53

TINUITY SUMMARY (AC-FT) - INFLOW= .4838E+02 EXCESS= .0000E+00 OUTFLOW= .4838E+02 BASIN STORAGE= .1816E-01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.63	14543.18	510.86	.75	5.00	14542.70	510.00	.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6374E+04 EXCESS= .0000E+00 OUTFLOW= .6339E+04 BASIN STORAGE= .3684E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.66	13883.90	511.55	.71	5.00	13883.35	510.00	.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6060E+04 EXCESS= .0000E+00 OUTFLOW= .6027E+04 BASIN STORAGE= .3569E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.70	12961.39	507.91	.66	5.00	12960.28	510.00	.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5619E+04 EXCESS= .0000E+00 OUTFLOW= .5588E+04 BASIN STORAGE= .3411E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.76	11991.35	507.20	.61	5.00	11989.47	510.00	.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5171E+04 EXCESS= .0000E+00 OUTFLOW= .5141E+04 BASIN STORAGE= .3249E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.80	11288.83	508.06	.57	5.00	11286.97	510.00	.57

NTINUITY SUMMARY (AC-FT) - INFLOW= .4831E+04 EXCESS= .0000E+00 OUTFLOW= .4801E+04 BASIN STORAGE= .3130E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	1.88	9992.11	511.24	.50	5.00	9991.95	510.00	.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4233E+04 EXCESS= .0000E+00 OUTFLOW= .4206E+04 BASIN STORAGE= .2901E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	2.00	8517.17	512.96	.42	5.00	8516.06	515.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3605E+04 EXCESS= .0000E+00 OUTFLOW= .3581E+04 BASIN STORAGE= .2631E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT46	MANE	2.11	7317.89	509.26	.36	5.00	7317.87	510.00	.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3082E+04 EXCESS= .0000E+00 OUTFLOW= .3060E+04 BASIN STORAGE= .2391E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	76.45	345.00	.29	5.00	76.45	345.00	.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4407E+02 EXCESS= .0000E+00 OUTFLOW= .4354E+02 BASIN STORAGE= .5432E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	74.54	345.00	.28	5.00	74.54	345.00	.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4287E+02 EXCESS= .0000E+00 OUTFLOW= .4234E+02 BASIN STORAGE= .5323E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	71.92	345.00	.27	5.00	71.92	345.00	.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4119E+02 EXCESS= .0000E+00 OUTFLOW= .4068E+02 BASIN STORAGE= .5172E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	69.27	345.00	.26	5.00	69.27	345.00	.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3945E+02 EXCESS= .0000E+00 OUTFLOW= .3895E+02 BASIN STORAGE= .4999E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	67.30	345.00	.25	5.00	67.30	345.00	.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3806E+02 EXCESS= .0000E+00 OUTFLOW= .3758E+02 BASIN STORAGE= .4847E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	63.41	340.00	.23	5.00	63.41	340.00	.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3520E+02 EXCESS= .0000E+00 OUTFLOW= .3475E+02 BASIN STORAGE= .4577E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	58.54	340.00	.21	5.00	58.54	340.00	.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3184E+02 EXCESS= .0000E+00 OUTFLOW= .3142E+02 BASIN STORAGE= .4220E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RMCDB	MANE	5.00	54.43	340.00	.19	5.00	54.43	340.00	.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2875E+02 EXCESS= .0000E+00 OUTFLOW= .2837E+02 BASIN STORAGE= .3881E+00 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	434.09	230.00	.59	5.00	434.09	230.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9135E+02 EXCESS= .0000E+00 OUTFLOW= .8874E+02 BASIN STORAGE= .3006E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	414.04	230.00	.57	5.00	414.04	230.00	.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8806E+02 EXCESS= .0000E+00 OUTFLOW= .8551E+02 BASIN STORAGE= .2954E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	386.17	230.00	.54	5.00	386.17	230.00	.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8347E+02 EXCESS= .0000E+00 OUTFLOW= .8099E+02 BASIN STORAGE= .2883E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	357.73	230.00	.51	5.00	357.73	230.00	.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7877E+02 EXCESS= .0000E+00 OUTFLOW= .7637E+02 BASIN STORAGE= .2804E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	336.61	230.00	.49	5.00	336.61	230.00	.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7520E+02 EXCESS= .0000E+00 OUTFLOW= .7287E+02 BASIN STORAGE= .2731E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	301.52	235.00	.44	5.00	301.52	235.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6835E+02 EXCESS= .0000E+00 OUTFLOW= .6603E+02 BASIN STORAGE= .2601E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	265.91	235.00	.39	5.00	265.91	235.00	.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6062E+02 EXCESS= .0000E+00 OUTFLOW= .5847E+02 BASIN STORAGE= .2433E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT47	MANE	5.00	235.53	235.00	.35	5.00	235.53	235.00	.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5390E+02 EXCESS= .0000E+00 OUTFLOW= .5191E+02 BASIN STORAGE= .2266E+01 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	4.83	227.91	250.97	.99	5.00	227.12	250.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4181E+02 EXCESS= .0000E+00 OUTFLOW= .4181E+02 BASIN STORAGE= .1945E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	4.91	214.51	250.52	.94	5.00	214.04	250.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3942E+02 EXCESS= .0000E+00 OUTFLOW= .3942E+02 BASIN STORAGE= .1864E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	196.29	255.00	.86	5.00	196.29	255.00	.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3613E+02 EXCESS= .0000E+00 OUTFLOW= .3613E+02 BASIN STORAGE= .1700E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	177.97	255.00	.78	5.00	177.97	255.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3284E+02 EXCESS= .0000E+00 OUTFLOW= .3284E+02 BASIN STORAGE= .1613E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	164.47	255.00	.72	5.00	164.47	255.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3042E+02 EXCESS= .0000E+00 OUTFLOW= .3043E+02 BASIN STORAGE= .1547E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	140.29	255.00	.62	5.00	140.29	255.00	.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2614E+02 EXCESS= .0000E+00 OUTFLOW= .2614E+02 BASIN STORAGE= .1965E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	114.92	255.00	.51	5.00	114.92	255.00	.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2168E+02 EXCESS= .0000E+00 OUTFLOW= .2168E+02 BASIN STORAGE= .1771E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RB20	MANE	5.00	94.73	255.00	.43	5.00	94.73	255.00	.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1817E+02 EXCESS= .0000E+00 OUTFLOW= .1817E+02 BASIN STORAGE= .1538E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	38.88	265.00	.77	5.00	38.88	265.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7236E+01 EXCESS= .0000E+00 OUTFLOW= .7240E+01 BASIN STORAGE= .6424E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	36.21	265.00	.72	5.00	36.21	265.00	.72

NTINUITY SUMMARY (AC-FT) - INFLOW= .6774E+01 EXCESS= .0000E+00 OUTFLOW= .6779E+01 BASIN STORAGE= .6181E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	32.61	270.00	.66	5.00	32.61	270.00	.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6147E+01 EXCESS= .0000E+00 OUTFLOW= .6151E+01 BASIN STORAGE= .7172E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	29.07	270.00	.59	5.00	29.07	270.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5524E+01 EXCESS= .0000E+00 OUTFLOW= .5528E+01 BASIN STORAGE= .6750E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	26.46	270.00	.54	5.00	26.46	270.00	.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5071E+01 EXCESS= .0000E+00 OUTFLOW= .5075E+01 BASIN STORAGE= .6460E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	21.81	270.00	.46	5.00	21.81	270.00	.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4275E+01 EXCESS= .0000E+00 OUTFLOW= .4279E+01 BASIN STORAGE= .7033E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	17.16	275.00	.37	5.00	17.16	275.00	.37

NTINUITY SUMMARY (AC-FT) - INFLOW= .3464E+01 EXCESS= .0000E+00 OUTFLOW= .3467E+01 BASIN STORAGE= .6231E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RD12	MANE	5.00	13.52	280.00	.30	5.00	13.52	280.00	.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2839E+01 EXCESS= .0000E+00 OUTFLOW= .2842E+01 BASIN STORAGE= .6715E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	70.77	300.00	.75	5.00	70.77	300.00	.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1332E+02 EXCESS= .0000E+00 OUTFLOW= .1332E+02 BASIN STORAGE= .8174E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	66.72	300.00	.70	5.00	66.72	300.00	.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1246E+02 EXCESS= .0000E+00 OUTFLOW= .1246E+02 BASIN STORAGE= .7943E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	61.12	300.00	.63	5.00	61.12	300.00	.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1128E+02 EXCESS= .0000E+00 OUTFLOW= .1128E+02 BASIN STORAGE= .8720E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	55.44	300.00	.57	5.00	55.44	300.00	.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1011E+02 EXCESS= .0000E+00 OUTFLOW= .1011E+02 BASIN STORAGE= .8331E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	51.24	300.00	.52	5.00	51.24	300.00	.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9264E+01 EXCESS= .0000E+00 OUTFLOW= .9267E+01 BASIN STORAGE= .8035E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	43.74	300.00	.44	5.00	43.74	300.00	.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7777E+01 EXCESS= .0000E+00 OUTFLOW= .7778E+01 BASIN STORAGE= .9167E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	5.00	35.76	300.00	.35	5.00	35.76	300.00	.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6264E+01 EXCESS= .0000E+00 OUTFLOW= .6266E+01 BASIN STORAGE= .8386E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT49	MANE	4.75	29.37	304.00	.29	5.00	29.12	305.00	.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5103E+01 EXCESS= .0000E+00 OUTFLOW= .5103E+01 BASIN STORAGE= .9324E-02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	4.46	14612.59	517.77	.73	5.00	14609.97	515.00	.73

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6468E+04 EXCESS= .0000E+00 OUTFLOW= .6373E+04 BASIN STORAGE= .1025E+03 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	4.54	13951.06	517.66	.69	5.00	13948.68	515.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6162E+04 EXCESS= .0000E+00 OUTFLOW= .6070E+04 BASIN STORAGE= .9918E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	4.66	13025.36	517.05	.63	5.00	13024.07	515.00	.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5657E+04 EXCESS= .0000E+00 OUTFLOW= .5569E+04 BASIN STORAGE= .9527E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	4.79	12051.94	517.77	.59	5.00	12051.65	515.00	.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5246E+04 EXCESS= .0000E+00 OUTFLOW= .5162E+04 BASIN STORAGE= .9041E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	4.90	11350.34	514.75	.55	5.00	11350.11	515.00	.55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4892E+04 EXCESS= .0000E+00 OUTFLOW= .4811E+04 BASIN STORAGE= .8716E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	5.00	10049.07	520.00	.48	5.00	10049.07	520.00	.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4310E+04 EXCESS= .0000E+00 OUTFLOW= .4236E+04 BASIN STORAGE= .8054E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	5.00	8569.97	520.00	.41	5.00	8569.97	520.00	.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3660E+04 EXCESS= .0000E+00 OUTFLOW= .3593E+04 BASIN STORAGE= .7310E+02 PERCENT ERR

FOR PLAN = 1 RATIO= .00

RPT50	MANE	5.00	7367.02	520.00	.35	5.00	7367.02	520.00	.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3136E+04 EXCESS= .0000E+00 OUTFLOW= .3075E+04 BASIN STORAGE= .6642E+02 PERCENT ERR

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
                *
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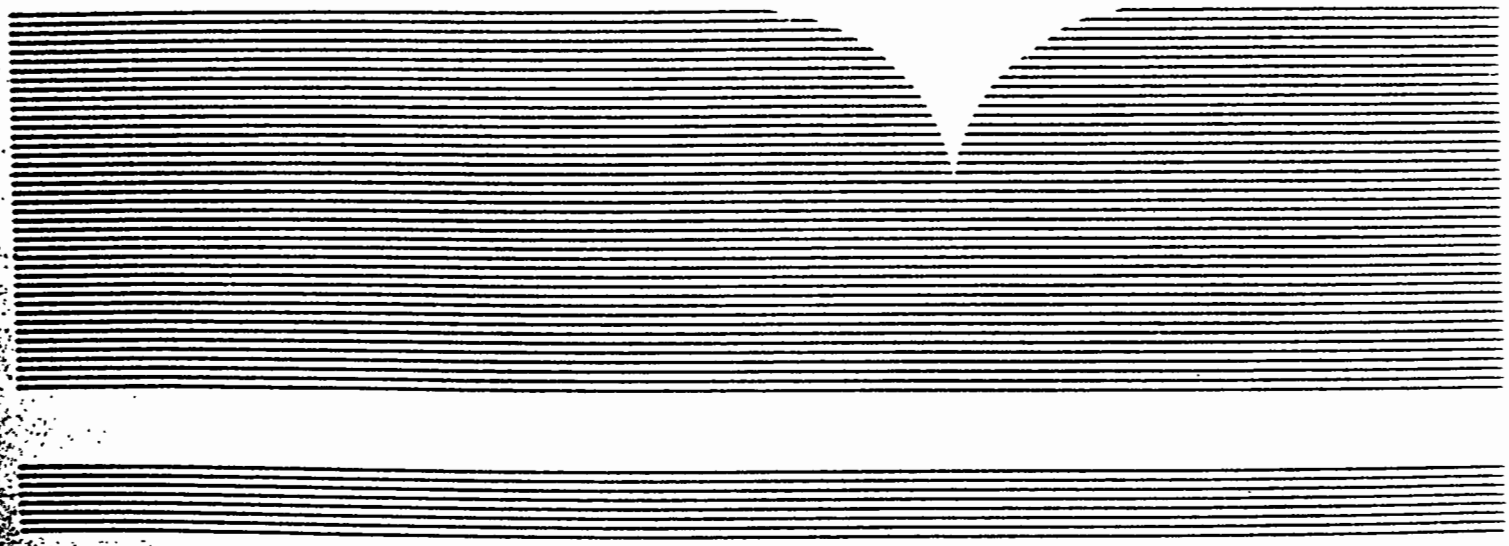
*** NORMAL END OF HEC-1 ***
NORMAL END OF HEC-1

PB89-218424

DESIGN OF RIPRAP REVETMENT

SUTRON CORPORATION
HERNDON, VA

MAR 89



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National Technical Information Service
NTIS

South Box Outlet

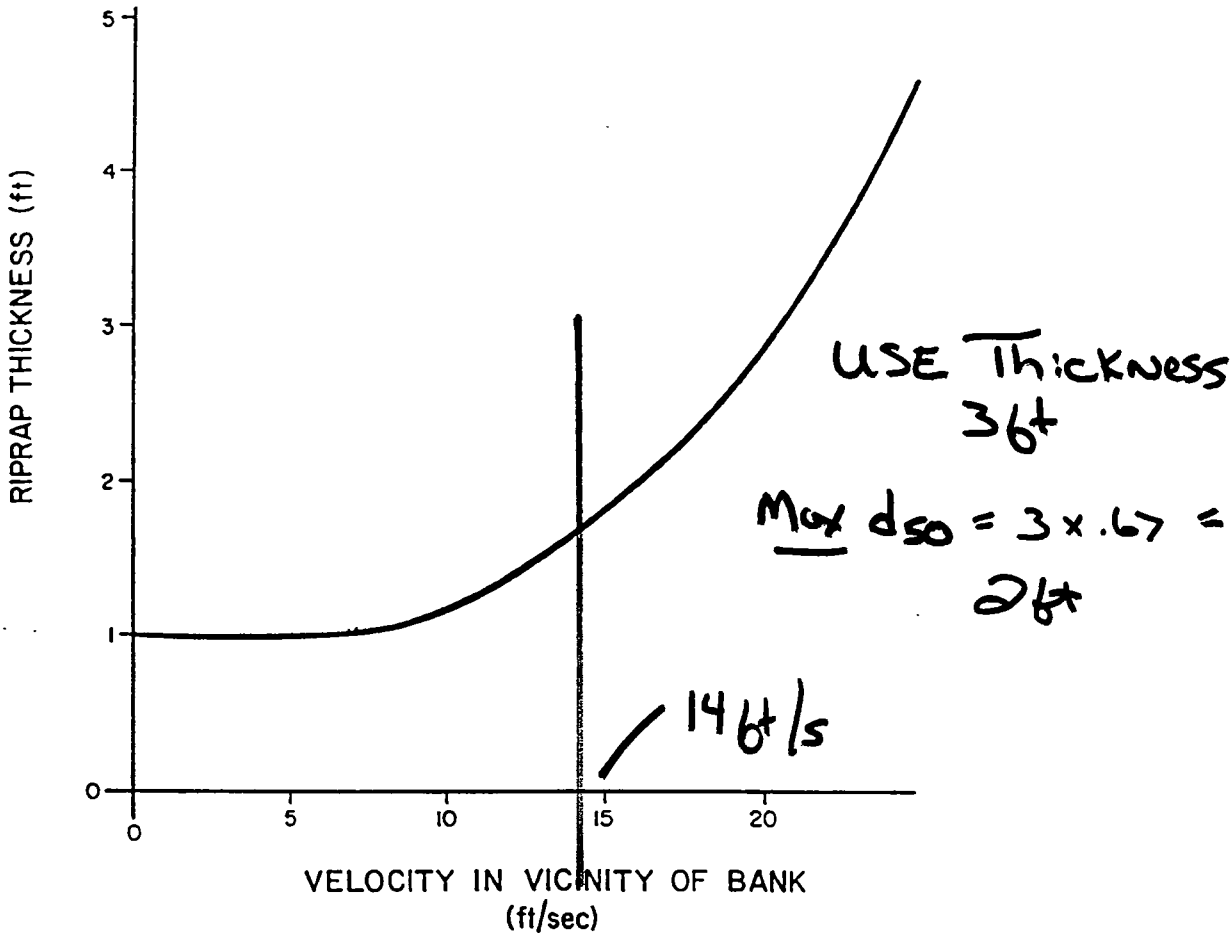


Figure 57. Required blanket thickness as a function of flow velocity.

Rock Grading: Table 6 provides guidelines for rock gradation in grouted riprap installations. Six size classes are listed.

Rock Quality: Rock used in grouted rock slope-protection is usually the same as that used in ordinary rock slope-protection. However, the specifications for specific gravity and hardness may be lowered if necessary as the rocks are protected by the surrounding grout.

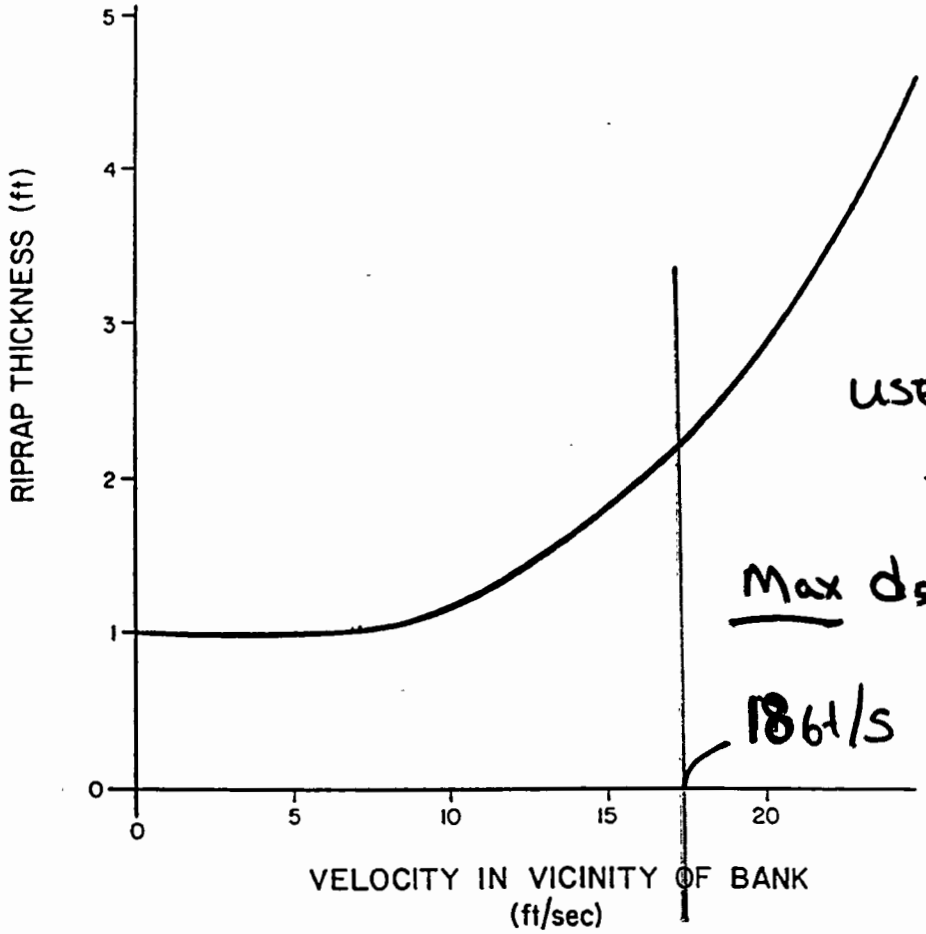
In addition, the rock used in grouted riprap installations should be free of fines in order that penetration of grout may be achieved.

Grout Quality and Characteristics: Grout should consist of good strength concrete using a maximum aggregate size of 3/4 in and a slump of 3 to 4 in (7.6 to 10.2 cm). Sand mixes may be used where roughness of the grout surface is unnecessary, provided sufficient cement is added to give good strength and workability.

The volume of grout required will be that necessary to provide penetration to the depths shown in table 6.

The finished grout should leave face stones exposed for one-fourth to one-third their depth and the surface of the grout should expose a matrix of coarse aggregate.

North Box Outlet



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6.3 GROUTED ROCK

Grouted rock revetment consists of rock slope-protection having voids filled with concrete grout to form a monolithic armor. See section 2.5 for additional descriptive information and general performance characteristics for grouted rock. Sample specifications for components of grouted rock revetments are provided in appendix A.

6.3.1 Design Guidelines for Grouted Rock

Components of grouted rock riprap design include layout of a general scheme or concept, bank preparation, bank slope, rock size and blanket thickness, rock grading, rock quality, grout quality, edge treatment, filter design, and pressure relief.

General: Grouted riprap designs are rigid monolithic bank protection schemes. When complete, they form a continuous surface. A typical grouted riprap section is shown in figure 56.

Grouted riprap should extend from below the anticipated channel bed scour depth to the design high water level plus additional height for freeboard (see section 3.6.2). The longitudinal extent of protection should be as described in section 3.6.1.

During the design phase for a grouted riprap revetment, special attention needs to be paid to edge treatment, foundation design, and mechanisms for hydrostatic pressure relief. Each of these items is discussed below.

Bank and Foundation Preparation: The bank should be prepared by first clearing all trees and debris from the bank, and grading the bank surface to the desired slope. In general, the graded surface should not deviate from the specified slope line by more than six in (15.2 cm). However, local depressions larger than this can be accommodated since initial placement of filter material and/or rock for the revetment will fill these depressions.

Since grouted riprap is rigid but not extremely strong, support by the embankment must be maintained. To form a firm foundation, it is recommended that the bank surface be tamped or lightly compacted. Care must be taken during bank compaction to maintain a soil permeability similar to that of the natural, undisturbed bank material. The foundation for the grouted riprap revetment should have a bearing capacity sufficient to support either the dry weight of the revetment alone, or the submerged weight of the revetment plus the weight of the water in the wedge above the revetment for design conditions, whichever is greater.

Any large boulders or debris found buried near the edges of the revetment should be removed.

Bank Slope: Bank slopes for grouted riprap revetments should not exceed 1.5:1.

Rock Size and Blanket Thickness: Blanket thickness and rock size requirements for grouted riprap installations are interrelated. Figure 57 illustrates a relationship between the design velocity and the required riprap blanket thickness for grouted riprap designs. The median rock size in the revetment should not exceed 0.67 times the blanket thickness. The largest rock used in the revetment should not exceed the blanket thickness.

UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF RECLAMATION

DESIGN OF SMALL DAMS

A Water Resources Technical Publication

First Edition, 1960
Second Edition, 1973
Revised Reprint, 1977
Third Edition, 1987

to a magnitude where cavitation conditions can develop.

The negative pressure on the crest may be resolved into a system of forces acting both upward and downstream. These forces should be considered in analyzing the structural stability of the crest structure.

An approximate force diagram of the subatmospheric pressures when the design head used to determine the crest shape is 75 percent of the maximum head is shown on figure 9-29. These data are based on average results of tests made on ideally shaped weirs with negligible approach velocities. Pressures for intermediate head ratios can be assumed to vary linearly, considering that no subatmospheric pressure prevails when $H_d/H_e = 1$.

9.15. *Gate-Controlled Ogee Crests.*—Releases for partial gate openings for gated crests occur as orifice flow. With full head on a gate that is opened a small amount, a free discharging trajectory will follow the path of a jet issuing from an orifice. For a vertical orifice the path of the jet can be expressed by the parabolic equation:

$$-y = \frac{x^2}{4H} \tag{5}$$

where H is the head on the center of the opening. For an orifice inclined an angle θ from the vertical, the equation is:

$$-y = x \tan\theta + \frac{x^2}{4H \cos^2\theta} \tag{6}$$

If subatmospheric pressures are to be avoided along the crest contact, the shape of the ogee downstream from the gate sill must conform to the trajectory profile.

Gates operated with small openings under high heads produce negative pressures along the crest in the region immediately below the gate if the ogee profile drops below the trajectory profile. Tests showed the subatmospheric pressures would be equal to about one-tenth of the design head when the gate is operated at small openings and the ogee is shaped to the ideal nappe profile, equation (2), for maximum head H_o. The force diagram for this condition is shown on figure 9-30.

The adoption of a trajectory profile rather than a nappe profile downstream from the gate sill will result in a wider ogee, and reduced discharge efficiency for full gate opening. Where the discharge efficiency is unimportant and where a wider ogee shape is needed for structural stability, the trajectory profile may be adopted to avoid subatmospheric pressure zones along the crest. Where the ogee is shaped to the ideal nappe profile for maximum head, the subatmospheric pressure area can be minimized by placing the gate sill downstream from the crest of the ogee. This will provide an orifice that is inclined downstream for small gate openings and will result in a steeper trajectory closer to the nappe-shaped profile.

9.16. *Discharge Over Gate-Controlled Ogee Crests.*—The discharge for a gated ogee crest at partial gate openings will be similar to flow through an orifice and may be computed by the equation:

$$Q = CDL\sqrt{2gH} \tag{7}$$

where:

H = head to the center of the gate opening (including the velocity head of approach),
D = shortest distance from the gate lip to the crest curve, and
L = crest width.

The coefficient, C, is primarily dependent upon the characteristics of the flow lines approaching and leaving the orifice. In turn, these flow lines are dependent on the shape of the crest and the type of gate. Figure 9-31, which shows coefficients of discharge for orifice flows for different θ angles, can be used for leaf gates or radial gates located at the crest or downstream of the crest. The θ angle for a particular opening is that angle formed by the tangent to the gate lip and the tangent to the crest curve at the nearest point of the crest curve for radial gates. This angle is affected by the gate radius and the location of the trunnion pin. For additional information and geometric computations see [20].

9.17. *Side Channel Spillways.*—(a) *General.*—The theory of flow in a side channel spillway [21] is based principally on the law of conservation of linear momentum, assuming that the only forces producing motion in the channel result from the fall in the water surface in the direction of the axis. This premise assumes that the entire energy of the flow over the crest is dissipated through its intermingling with the channel flow and is therefore of

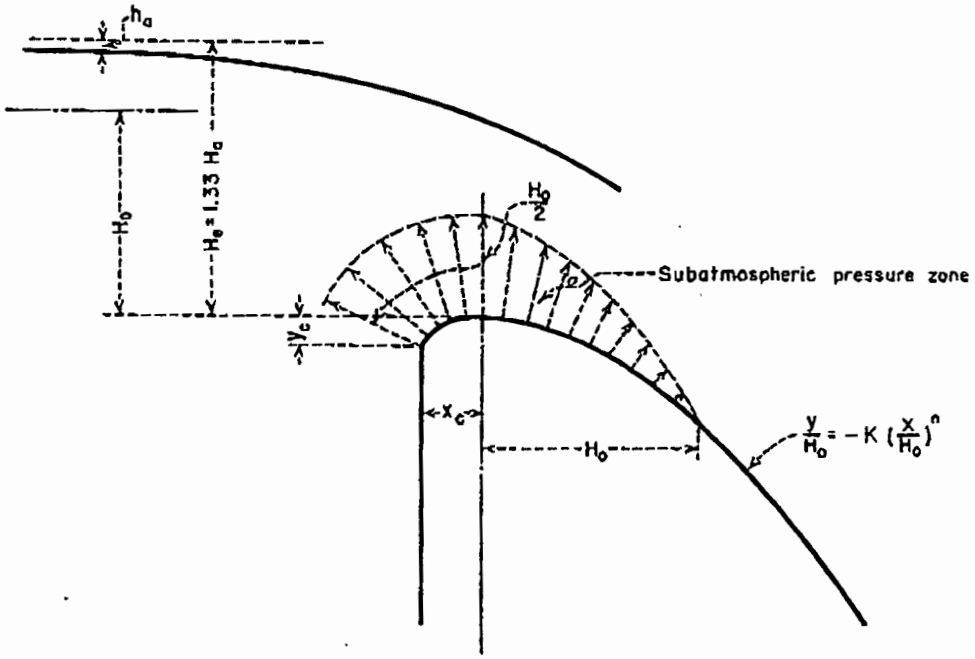


Figure 9-29.—Subatmospheric crest pressures for H_a/H_e = 0.75. 288-D-2415.

no assistance in moving the water along the channel. Axial velocity is produced only after the incoming water particles join the channel stream.

For any short reach of the side channel, the momentum at the beginning of the reach plus any increase in momentum from external forces must equal the momentum at the end of the reach. If a short reach, Δx in length, is considered and the velocity and discharge at the upstream section are v and Q, respectively, then the velocity and discharge at the downstream section will be $v + \Delta v$ and $Q + q(\Delta x)$, where q is the inflow per foot of length of weir crest. Therefore, the momentum[2] at the upstream section will be:

$$M_u = \frac{Qv}{g} \tag{8}$$

And the momentum at the downstream section will be:

$$M_d = \frac{[Q + q(\Delta x)]}{g}(v + \Delta v) \tag{9}$$

[2]The weight of 1 ft³ of water is taken as a unit force to eliminate the necessity of multiplying all forces and moments by 62.4 to convert them into pounds.

Subtracting equation (8) from equation (9):

$$\Delta M = \frac{Q(\Delta v)}{g} + \frac{q(\Delta x)}{g}(v + \Delta v) \tag{10}$$

Dividing by Δx:

$$\frac{\Delta M}{\Delta x} = \frac{Q(\Delta v)}{g(\Delta x)} + \frac{q}{g}(v + \Delta v) \tag{11}$$

Since the rate of change of momentum with respect to time is v times the rate of change with respect to x, and considering the average velocity = $v+(\Delta v/2)$, equation (11) can be written:

$$\frac{\Delta M}{\Delta t} = \frac{Q(\Delta v)}{g(\Delta x)}\left[v + \frac{1}{2}(\Delta v)\right] + \frac{q}{g}(v + \Delta v)\left[v + \frac{1}{2}(\Delta v)\right] \tag{12}$$

Since $\Delta M/\Delta t$ is the accelerating force, which is equal to the slope of the water surface, $\Delta y/\Delta x$, times the average discharge, equation (12) becomes:

$$\frac{\Delta y}{\Delta x}\left[Q+\frac{1}{2}(\Delta Q)\right]=\frac{Q(\Delta v)}{g(\Delta x)}\left[v+\frac{1}{2}(\Delta v)\right]+\frac{q}{g}(v+\Delta v)\left[v+\frac{1}{2}(\Delta v)\right] \quad (13)$$

from which the change in water surface elevation is:

$$\Delta y=\frac{Q\left[v+\frac{1}{2}(\Delta v)\right]}{g\left[Q+\frac{1}{2}(\Delta Q)\right]}\left[\Delta v+\frac{q(\Delta x)}{Q}(v+\Delta v)\right] \quad (14)$$

If Q_1 and v_1 are values at the beginning of the reach, and Q_2 and v_2 are the values at the end of the reach, the equation can be written:

$$\Delta y=\frac{Q_1}{g}\frac{(v_1+v_2)}{(Q_1+Q_2)}\left[(v_2-v_1)+\frac{v_2(Q_2-Q_1)}{Q_1}\right] \quad (15)$$

Similarly, the derivation can be developed so that:

$$\Delta y=\frac{Q_2}{g}\frac{(v_1+v_2)}{(Q_1+Q_2)}\left[(v_2-v_1)+\frac{v_1(Q_2-Q_1)}{Q_2}\right] \quad (16)$$

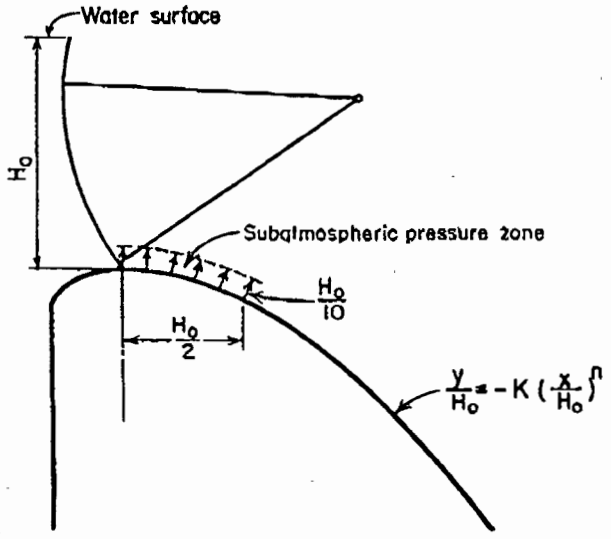


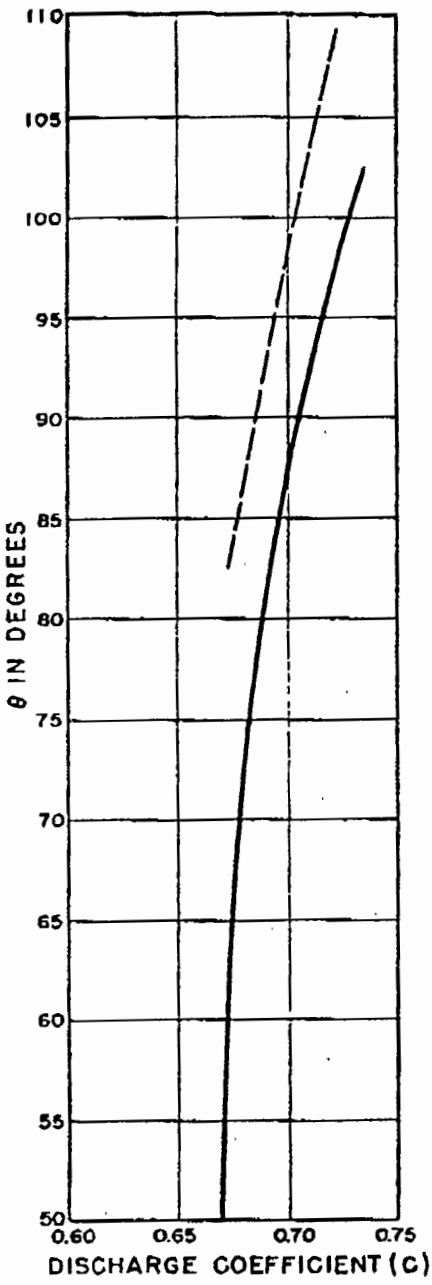
Figure 9-30.—Subatmospheric crest pressures for undershot gate flow. 288-D-2416.

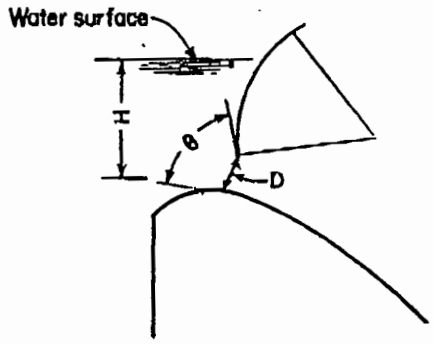
By use of equation (15) or (16), the water surface profile can be determined for any particular side channel by assuming successive short reaches of channel once a starting point is found. The solution of equation (15) or (16) is obtained by a trial-and-error procedure. For a reach of length Δx in a specific location, Q_1 and Q_2 will be known. If the depth at one end of the reach has been established, a trial depth at the other end of the reach can be found that will satisfy the indicated and computed values of Δy.

As in other water surface profile determinations, the depth of flow and the hydraulic characteristics of the flow will be affected by backwater influences from some control point or by critical conditions along the reach of the channel under consideration. The selection of a control for starting the water surface profile computations is treated in the subsequent discussion.

When the bottom of the side channel trough is selected so that its depth below the hydraulic gradient is greater than the minimum specific energy depth, flow will be either at the subcritical or supercritical stage, depending either on the relation of the bottom profile to critical slope or on the influences of a downstream control section. If the slope of the bottom is greater than critical and a control section is not established below the side channel trough, supercritical flow will prevail throughout the length of the channel. For this stage, velocities will be high and water depths will be shallow, resulting in a relatively high fall from the reservoir water level to the water surface in the trough. This flow condition is illustrated by profile B' on figure 9-32. Conversely, if a control section is established downstream from the side channel trough to increase the upstream depths, the channel can be made to flow at the subcritical stage. Velocities at this stage will be less than critical, and the greater depths will result in a smaller drop from the reservoir water surface to the side channel water surface profile. The condition of flow for subcritical depths is illustrated on figure 9-32 by water surface profile A'.

The effect of the fall distance from the reservoir to the channel water surface for each type of flow is depicted on figure 9-32(B). It can be seen that for the subcritical stage, the incoming flow will not develop high transverse velocities because of the low drop before it meets the channel flow, thus effecting a good diffusion with the water bulk in the trough.





EQUATION FOR DISCHARGE

$Q = CDL\sqrt{2gH}$

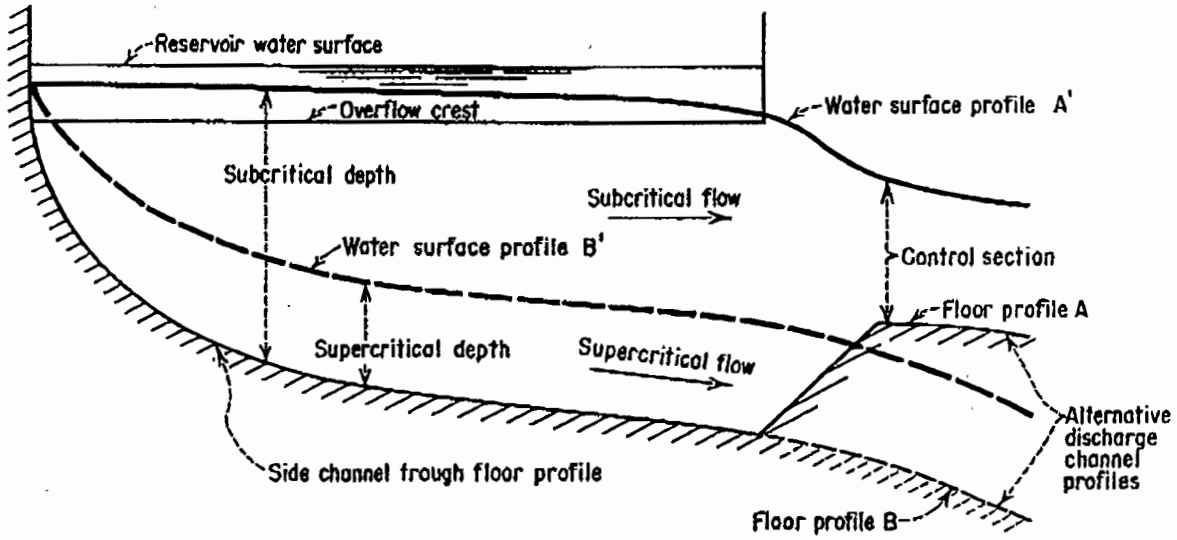
D = Net gate opening
L = Crest width
H = Head to center of gate opening
For C, use dashed line when gate seats on crest and solid line when gate seats below crest.

REFERENCE

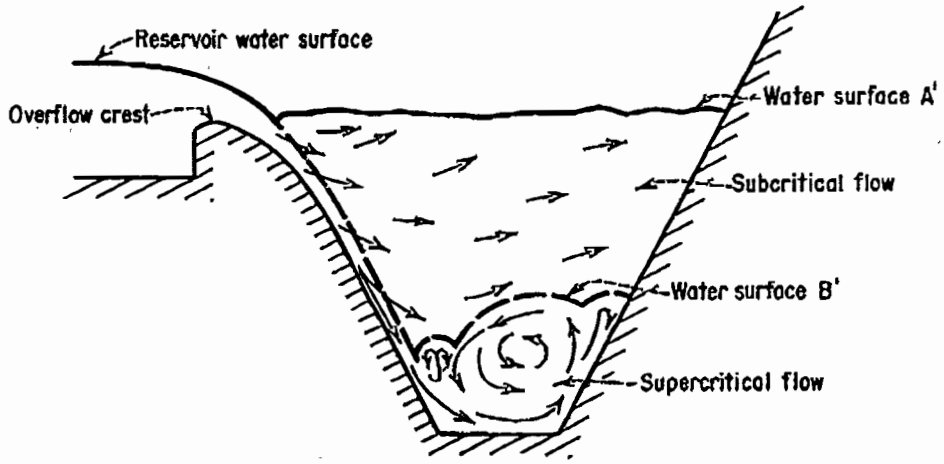
U.S. Army
Corps Of Engineers
Hydraulic Design Criteria
Design Chart 311-1

Figure 9-31.—Discharge coefficient for flow under gates. 103-D-1875.

Because both the incoming velocities and the channel velocities will be relatively slow, a fairly complete intermingling of the flows will occur, thereby producing a comparatively smooth flow in the side channel. Where the channel flow is at the supercritical stage, the channel velocities will be high, and the intermixing of the high-energy transverse flow with the channel stream will be rough and turbulent. The transverse flows will tend to sweep the channel flow to the far side of the channel, producing violent wave action with attendant vibrations. Therefore, it is evident that flows should be



(A) SIDE CHANNEL PROFILE



(B) SIDE CHANNEL CROSS SECTION

Figure 9-32.—Side channel flow characteristics. 288-D-2418.

maintained at subcritical stage for good hydraulic performance. This can be achieved by establishing a control section downstream from the side channel trough.

The cross-sectional shape of the side channel trough will be influenced by the overflow crest on the one side and by the bank conditions on the opposite side. Because of turbulence and vibrations inherent in side channel flow, a side channel design is ordinarily not considered except where a competent foundation such as rock exists. The channel sides will, therefore, usually be a concrete lining placed on a slope and anchored directly to the rock. A trapezoidal cross section is the one most often used for a side channel trough. The width of such a channel in relation to the depth should be considered. If the width to depth ratio is large, the depth of flow in the channel will be shallow, similar

to that depicted by the cross section *abfg* on figure 9-33. It is evident that for this condition a poor diffusion of the incoming flow with the channel flow will result. A cross section with a minimum width to depth ratio will provide the best hydraulic performance; this indicates that a cross section approaching *adj* (on fig. 9-33) would be the ideal choice both from the standpoint of hydraulics and economy. However, some bottom width is needed to avoid construction difficulties caused by confined working space. Furthermore, the stability of both the structure and the hillside, which might be jeopardized by an extremely deep cut in the abutment, must also be considered. Therefore, the minimum bottom width selected must be commensurate with both the practical and structural aspects of the problem.

A control section downstream from the side channel trough is achieved by constricting the channel sides or elevating the channel bottom to produce a point of critical flow. Flows upstream from the control will be at the subcritical stage and will provide a maximum of depth in the side channel trough. The side channel bottom and control dimensions are then selected so that flow in the trough opposite the crest will be at the greatest depth possible without submerging the flow over the crest. Flow in the discharge channel downstream from the control will be the same as that in an ordinary channel or chute spillway.

(b) *Design Example.*—A design example illustrates the procedures for determining the hydraulic design of a side channel spillway control structure. The problem is to design a side channel spillway 100 feet long (station 0+00 to station 1+00) to discharge a maximum of 2,000 ft³/s. The spillway crest is at elevation 1000.0 feet, and the discharge per foot of length $q = 2{,}000/100 = 20$ ft³/s. Assume the crest coefficient $C = 3.6$, $H_o = (q/C)^{2/3} = 3.1$ feet.

For the side channel trough, assume a trapezoidal section with ½:1 side slopes and a bottom width of 10 feet, whose rise in bottom profile is 1.0 foot in the 100 feet of channel length. (The slope of the channel profile is arbitrary; however, a relatively flat slope will provide greater depths and lower velocities and, consequently, will ensure better intermingling of flows at the upstream end of the channel and avoid the possibility of accelerating or supercritical flows occurring in the channel for smaller discharges.) Furthermore, assume that a control section is placed downstream from the side channel trough with its bottom at the same elevation as the bottom of the side channel floor at the downstream end. Assume that a transition is made from the ½:1 slopes of the trough section to a rectangular section at the control. Arbitrarily assume a datum for the control section bottom at elevation 100.0.

Therefore, the critical depth for flow at the control is $d_c = (q_1^2/g)^{1/3}$.

For this example:

$$q_1 = \frac{2{,}000}{10} = 200 \text{ ft}^3/\text{s per foot of width}$$

$$d_c = \left(\frac{200^2}{32.2}\right)^{1/3} = 10.75 \text{ feet}$$

$$v_c = \frac{q_1}{d_c} = \frac{200}{10.75} = 18.6 \text{ ft/s}$$

$$h_{v_c} = \frac{v_c^2}{2g} = \frac{18.6^2}{64.4} = 5.37 \text{ feet}$$

Assume a transition loss from the end of the side channel trough to the control section (to provide for losses caused by contraction, by diffusion of the flows not affected in the side channel proper, and by friction losses) equal to 0.2 of the difference in velocity heads between the ends of the transition. The flow characteristics at the downstream end of the side channel can be obtained from Bernoulli's equation (app. B). For figure 9-34, Bernoulli's equation may be written as follows:

$$d_{(1+00)} + h_{v_{(1+00)}} = d_c + h_{v_c} + 0.2(h_{v_c} - h_{r_{(1+00)}})$$

This expression must be solved by trial and error. First, assume a value of $d_{(1+00)}$, and solve for $h_{v\,(1+00)}$. If the use of these values does not result in a balanced equation, a new value must be assumed for $d_{(1+00)}$ and the process repeated. A value of 16.34 feet for $d_{(1+00)}$ was found to satisfy the equation as follows:

For $d_{(1+00)} = 16.34$, the area of flow at station 1+00 in the trapezoidal cross section with 10-foot bottom width and ½:1 side slopes = 297 ft².

$$v_{(1+00)} = \frac{2{,}000}{297} = 6.73 \text{ ft/s}$$

$$h_{v(1+00)} = \frac{6.73^2}{64.4} = 0.70 \text{ foot}$$

$$0.2(h_{v_c} - h_{v(1+00)}) = 0.2\ (5.37 - 0.70) = 0.93 \text{ foot}$$

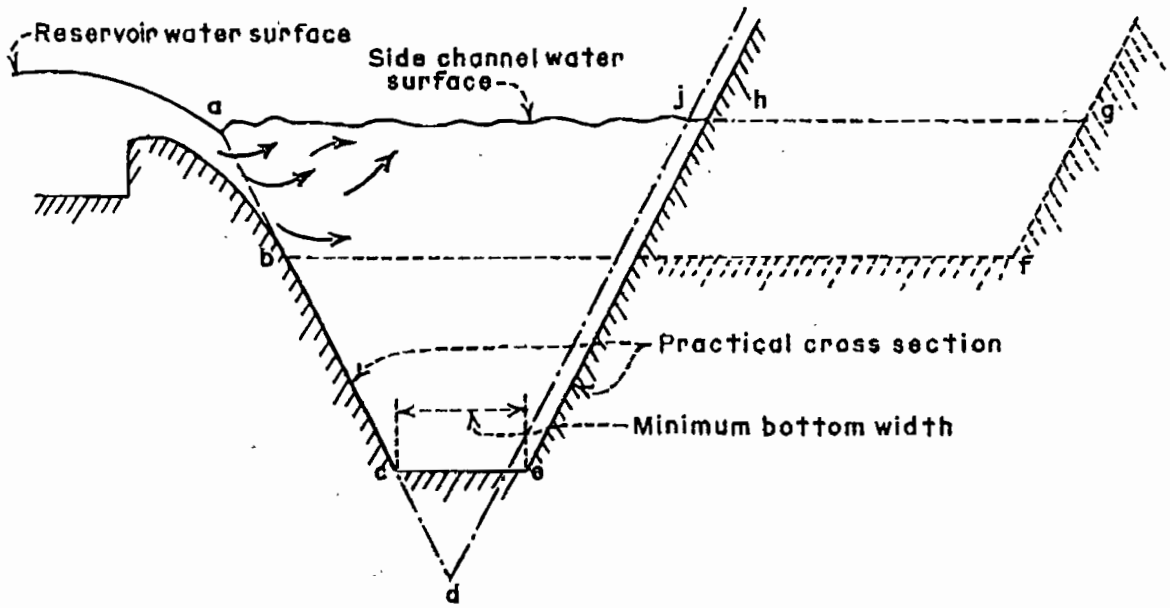


Figure 9-33.—Comparison of side channel cross sections. 288-D-2419.

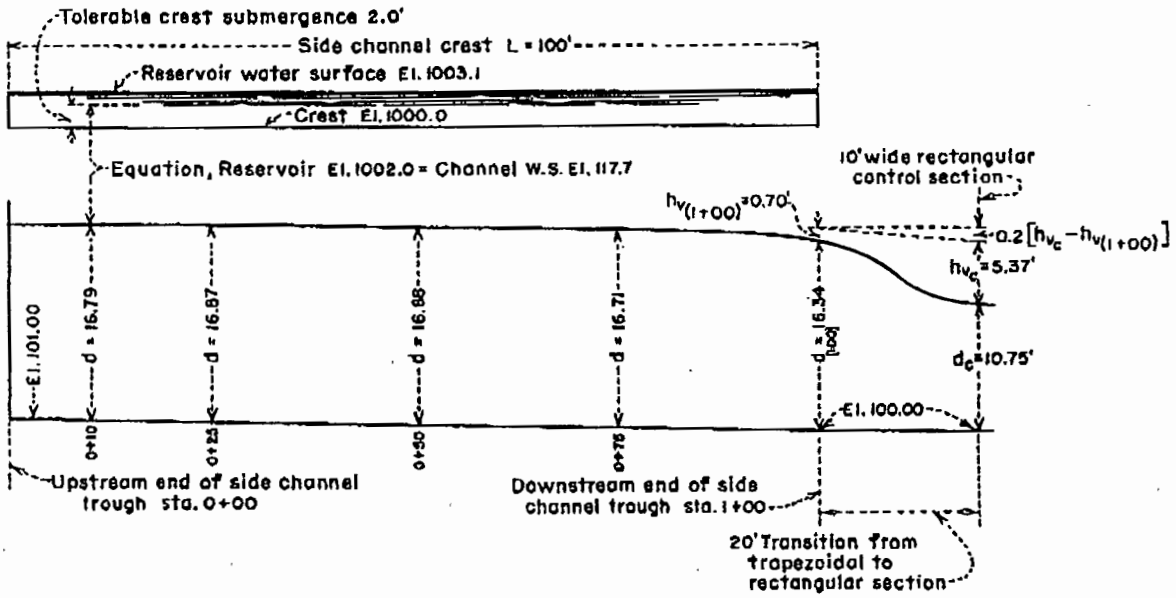


Figure 9-34.—Example of hydraulic design for side channel spillway. 288-D-2420.

Substituting the values in Bernoulli's equation:

$$16.34 + 0.70 = 10.75 + 5.37 + 0.93$$
$$17.04 = 17.05 \text{ (A satisfactory check)}$$

With the hydraulic properties of the side channel at station 1+00 determined, the water surface profile along the side channel trough can be determined from equation (15). The trial-and-error computations are shown in table 9-3. The resulting water surface profile is shown on figure 9-34.

Next, the channel profile is fitted to the crest datum by relating the water surface profile to the

Table 9-3.—Side channel spillway computations. Using eq(15) for design example in section 9.17(b): given Q = 2,000 ft³/s, bottom width = 10 feet, side slopes = ½:1, and bottom slope = 1 foot in 100 feet.

(1) Station	(2) Δx	(3) Elevation bottom	(4) Trial Δy	(5) Water surface elevation	(6) d	(7) A	(8) Q	(9) v	(10) Q_1+Q_2	(11) $\frac{Q_1}{g(Q_1+Q_2)}$	(12) v_1+v_2	(13) v_2-v_1	(14) Q_2-Q_1	(15) $\frac{Q_2-Q_1}{Q_1}$	(16) $\frac{v_2(Q_2-Q_1)}{Q_1}$	(17) (13)+(16)	(18) Δy = (11) ×(12)×(17)	(19) Remarks
1+00	–	100.0	–	116.84	16.34	297	2,000	6.73	–	–	–	–	–	–	–	–	–	–
0+75	25	100.25	1.00	117.34	17.09	317	1,500	4.73	3,500	0.01332	11.46	2.00	500	0.333	2.24	4.24	0.84	Too low
			.62	116.96	16.71	307	–	4.89	–	–	11.62	1.84	–	–	–	4.08	.63	OK
0+50	25	100.50	.50	117.46	16.96	313	1,000	3.19	2,500	.01244	8.08	1.70	500	.50	2.44	4.14	.42	Too low
			.42	117.38	16.88	311	–	3.22	–	–	8.11	1.67	–	–	–	4.11	.41	OK
0+25	25	100.75	.30	117.68	16.93	313	500	1.60	1,500	.01036	4.82	1.62	500	1.00	3.22	4.84	.24	Too low
			.24	117.62	16.87	311	–	1.61	–	–	4.83	1.61	–	–	–	4.83	.24	OK
0+00	15	100.90	.10	117.72	16.82	310	200	.64	700	.00688	2.25	.97	300	1.50	2.41	3.38	.07	Too low
			.07	117.69	16.79	309	–	.65	–	–	2.26	.96	–	–	–	3.37	.07	OK

reservoir water level. To obtain the assumed crest coefficient value of 3.6, excessive submergence of the overflow must be avoided. If it is assumed that a maximum of two-thirds submergence at the upstream end of the channel can be tolerated, the maximum water surface level in the channel will be $\frac{2}{3}H_o$ above the crest, or elevation 1002.0. Then at station 0+10, the channel datum water surface level elevation 117.7 will become elevation 1002.0, placing the channel floor level for station 0+00 at approximately elevation 985.3, and for station 1+00 at approximately elevation 984.3.

The design of the side channel control structure would be completed by designing the uncontrolled ogee crest by the methods shown in section 9.13, to obtain the crest coefficient value of 3.6 that was assumed.

Variations in the design can be made by assuming different bottom widths, different channel slopes, and varying control sections. A proper and economical design can usually be achieved after comparing several alternatives.

D. HYDRAULICS OF FREE-FLOW DISCHARGE CHANNELS

9.18. *General.*—Discharge generally passes through the critical stage in the spillway control structure and enters the discharge channel as supercritical or shooting flow. To avoid a hydraulic jump below the control, the flow must remain at the supercritical stage throughout the length of the channel. The flow in the channel may be uniform or it may be accelerated or decelerated, depending on the slopes and dimensions of the channel and on the total drop. Where it is desired to minimize the grade to reduce excavation at the upstream end of a channel, the flow might be uniform or decelerating, followed by accelerating flow in the steep drop leading to the downstream river level. Flow at any point along the channel will depend upon the specific energy, $d+h_v$, available at that point. This energy will equal the total drop from the reservoir water level to the floor of the channel at the point under consideration, less the head losses accumulated to that point. The velocities and depths of flow along the channel can be fixed by selecting the grade and the cross-sectional dimensions of the channel.

The velocities and depths of free surface flow in a channel, whether it be an open channel, a conduit, or a tunnel, conform to the principle of the conservation of energy as expressed by Bernoulli's theorem, which states "the absolute energy of flow at any cross section is equal to the absolute energy at a downstream section plus intervening losses of energy." As applied to figure 9-35 this relationship can be expressed as follows:

$$\Delta Z + d_1 + h_{v_2} = d_2 + h_{v_2} + \Delta h_L \qquad (17)$$

When the channel grades are not too steep, for practical purposes the normal depth, d_n, can be considered equal to the vertical depth d. The term Δh_L includes all losses that occur in the reach of channel, such as friction, turbulence, impact, and transition losses. Because changes in most channels are made gradually, all losses except those from friction

Spillway Channel Design **SOUTH**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Station	dX	Channel bottom	trial dY	WSE	d	A	Q	v	Q1+Q2	Q1 / g(Q1+Q2)	v1+v2	v2-v1	Q2-Q1	Q2-Q1 / Q1	v2(Q2-Q1) / Q1	(13) + (16)	dy (11)*(12)*(17)	Notes
2000.00	x	53.40	x	63.25	9.85	343.27	2496.20	7.27	x	x	x	x	x	x	x	x	x	
2100.00	100.00	54.50	1.02	64.27	9.77	339.70	1528.00	4.50	4024.20	0.02	11.77	2.77	968.20	0.39	1.74	4.52	1.02	ok
2150.00	50.00	55.30	0.35	64.62	9.32	319.86	990.90	3.10	2518.90	0.02	7.60	1.40	537.10	0.35	1.09	2.49	0.36	ok
2200.00	50.00	56.00	0.20	64.82	8.82	298.29	576.00	1.93	1566.90	0.02	5.03	1.17	414.90	0.42	0.81	1.98	0.20	ok
2250.00	50.00	56.70	0.08	64.90	8.20	272.24	296.00	1.09	872.00	0.02	3.02	0.84	280.00	0.49	0.53	1.37	0.08	ok
2300.00	50.00	57.40	0.03	64.93	7.53	244.95	132.00	0.54	428.00	0.02	1.63	0.55	164.00	0.55	0.30	0.85	0.03	ok
2350.00	50.00	58.10	0.01	64.94	6.84	217.79	44.00	0.20	176.00	0.02	0.74	0.34	88.00	0.67	0.13	0.47	0.01	ok

Spillway Channel Design **NORTH**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Station	dX	Channel bottom	trial dY	WSE	d	A	Q	v	Q1+Q2	Q1 / g(Q1+Q2)	v1+v2	v2-v1	Q2-Q1	Q2-Q1 / Q1	v2(Q2-Q1) / Q1	(13) + (16)	dy (11)*(12)*(17)	Notes
2000.00	x	53.40	x	63.50	10.10	354.51	2588.00	7.30	x	x	x	x	x	x	x	x	x	
2100.00	100.00	54.50	0.92	64.42	9.92	346.41	1717.00	4.96	4305.00	0.02	12.26	2.34	871.00	0.34	1.67	4.01	0.92	ok
2150.00	50.00	55.30	0.30	64.72	9.42	324.24	1311.00	4.04	3028.00	0.02	9.00	0.91	406.00	0.24	0.96	1.87	0.30	ok
2200.00	50.00	55.80	0.22	64.94	9.14	312.04	968.00	3.10	2279.00	0.02	7.15	0.94	343.00	0.26	0.81	1.75	0.22	ok
2250.00	50.00	56.50	0.14	65.08	8.58	288.12	684.00	2.37	1652.00	0.02	5.48	0.73	284.00	0.29	0.70	1.42	0.14	ok
2300.00	50.00	57.10	0.09	65.17	8.07	266.87	454.00	1.70	1138.00	0.02	4.08	0.67	230.00	0.34	0.57	1.24	0.09	ok
2350.00	50.00	57.80	0.06	65.23	7.43	240.95	274.00	1.14	728.00	0.02	2.84	0.56	180.00	0.40	0.45	1.01	0.06	ok

Station	South WSE	v	Freeboard	Parvin Weir Ht	Min TW	TW*
2000.00	63.25	7.27	1.32 ft	66.22	64.57	65.00
2100.00	64.27	4.50	1.00 ft	66.22	65.27	66.00
2150.00	64.62	3.10	1.00 ft	66.22	65.62	66.00
2200.00	64.82	1.93	1.00 ft	66.22	65.82	66.00
2250.00	64.90	1.09	1.00 ft	66.22	65.90	66.00
2300.00	64.93	0.54	1.00 ft	66.22	65.93	66.00
2350.00	64.94	0.20	1.00 ft	66.22	65.94	66.00

Station	North WSE	v	Freeboard	Parvin Weir Ht	Min TW	TW*
2000.00	63.50	7.30	1.33 ft	66.22	64.83	65.00
2100.00	64.42	4.96	1.00 ft	66.22	65.42	66.00
2150.00	64.72	4.04	1.00 ft	66.22	65.72	66.00
2200.00	64.94	3.10	1.00 ft	66.22	65.94	66.00
2250.00	65.08	2.37	1.00 ft	66.22	66.08	66.10
2300.00	65.17	1.70	1.00 ft	66.22	66.17	66.20
2350.00	65.23	1.14	1.00 ft	66.22	66.23	66.30

* Wall is proposed to be this high or greater

South

Station	elevation bottom	Q	Bottom	Depth	q1	dc	vc	hvc	v	area	hv	**Check # Depth**	**Check # Balance**
20-00	53.40	2496.20	25.00	9.85	99.85	6.77	14.76	3.38	7.27	343.27	0.82	10.67	10.66

North

Station	elevation bottom	Q	Bottom	Depth	q1	dc	vc	hvc	v	area	hv	**Check # Depth**	**Check # Balance**
20-00	53.40	2587.90	25.00	10.10	103.52	6.93	14.94	3.46	7.30	354.51	0.83	10.93	10.92

Calculation to determine starting WSE

NORTH BOX
WSPGW MODEL

```
T1 Green Park
0
T2 Alternative 1 for North Channel
T3 1/25/02
SO     631.900   47.200   9                                    50.000
TS     632.000   47.200   9       .030                                      .000
TS     652.000   46.800   8       .030                                      .000
TS     675.000   46.300   7       .013                                      .000
TS     689.900   46.000   6       .013                                      .000
R      690.000   46.000   5       .013                                      .000
R      815.000   46.400   5       .013                                      .000
.000 0
TS     865.000   46.600   2       .013                                      .000
R     1477.000   48.200   2       .013                                      .000
.000 0
WE    1477.000   48.200   2       .500
TS    1502.000   48.890   4       .013                                      .000
TS    1502.100   48.900   3       .013                                      .000
R     1578.000   50.790   3       .013                                      .000
SH    1578.000   50.790   3                                    58.060
CD    1  2   0     .000    7.000    91.000   .000   .000    .00
CD    3  2   0     .000   10.000    50.000   .000   .000    .00
CD    5  3   5     .830    5.000    64.150   .000   .000    .00
CD    6  2   0     .000    7.000    65.000   .000   .000    .00
CD    7  2   0     .000    7.000    90.000   .000   .000    .00
CD    8  2   0     .000    7.000   160.000   .000   .000    .00
CD    9  2   0     .000    7.000   300.000   .000   .000    .00
CD    2  6   0     .000              .00     .00    .00    .00    .00    .00    .00
.00   .00   .00
CD    4  6   0     .000              .00     .00    .00    .00    .00    .00    .00
.00   .00   .00
PTS   235    .000    .000 48.000    .000 47.750   1.400 47.000   3.200 46.000   4.530
PTS        44.000   6.030 42.000   6.740 40.000   7.160 38.000   7.420 37.000   7.480
PTS        36.000   7.500 35.000   7.480 34.000   7.420 32.000   7.160 30.000   6.740
PTS        28.000   6.030 26.000   4.530 25.000   3.200 24.000    .010 23.000   3.200
PTS        22.000   4.530 20.000   6.030 18.000   6.740 16.000   7.160 14.000   7.420
PTS        13.000   7.480 12.000   7.500 11.000   7.480 10.000   7.420  8.000   7.160
PTS         6.000   6.740  4.000   6.030  2.000   4.530  1.000   3.200   .250   1.400
PTS   435    .000    .000 48.000    .000 47.750   3.400 47.000   5.200 46.000   6.530
PTS        44.000   8.030 42.000   8.740 40.000   9.160 38.000   9.420 37.000   9.480
PTS        36.000   9.500 35.000   9.480 34.000   9.420 32.000   9.160 30.000   9.740
PTS        28.000   8.030 26.000   7.530 25.000   5.200 24.000    .010 23.000   5.200
PTS        22.000   6.530 20.000   8.030 18.000   8.740 16.000   9.160 14.000   9.420
PTS        13.000   9.480 12.000   9.500 11.000   9.480 10.000   9.420  8.000   9.160
PTS         6.000   8.740  4.000   8.030  2.000   6.530  1.000   5.200   .250   3.400
Q          5080.000   .0
```

FILE: ngreenalt3.WSW

W S P G W - CIVILDESIGN Version 12.91
For: PENTACORE Engineering, Las Vegas, Nevada - S/N 791
WATER SURFACE PROFILE LISTING

Green Park
Alternative 1 for North Channel
1/25/02

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Wid
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm
631.900	47.200	1.216	48.416	5080.00	13.93	3.01	51.43	.00	2.07	300.
TRANS STR	.0000					.0619	.01	1.22	2.23	
632.000	47.200	1.213	48.413	5080.00	13.96	3.03	51.44	.00	2.07	300.
TRANS STR	-.0200					.0725	1.45	1.21	2.23	
652.000	46.800	1.630	48.430	5080.00	19.48	5.89	54.32	.00	3.15	160.
TRANS STR	-.0217					.0111	.25	1.63	2.69	
675.000	46.300	3.033	49.333	5080.00	18.61	5.38	54.71	.00	4.63	90.
TRANS STR	-.0201					.0050	.07	3.03	1.88	
689.900	46.000	4.653	50.653	5080.00	18.20	5.14	55.79	.00	5.00	64.
.100	.0000					.0078	.00	4.65	1.54	.
		---------- WARNING - Flow depth near top of box conduit -------								
690.000	46.000	4.652	50.652	5080.00	18.20	5.14	55.80	.00	5.00	64.
11.167	.0032					.0079	.09	4.65	1.54	5.
		---------- WARNING - Flow depth near top of box conduit -------								
701.167	46.036	4.609	50.645	5080.00	18.37	5.24	55.88	.00	5.00	64.
57.340	.0032					.0086	.49	4.61	1.56	5.
		---------- WARNING - Flow depth near top of box conduit -------								

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WATER SURFACE PROFILE LISTING

Green Park
Alternative 1 for North Channel
1/25/02

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Wid
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm
758.508	46.219	4.395	50.614	5080.00	19.26	5.76	56.38	.00	5.00	64.
56.492	.0032					.0098	.55	4.39	1.67	5.
815.000	46.400	4.190	50.590	5080.00	20.21	6.34	56.93	.00	5.00	64.
TRANS STR	.0040					.0067	.33	4.19	1.80	
865.000	46.600	6.833	53.433	5080.00	16.70	4.33	57.77	.00	6.83	35.
276.010	.0026					.0027	.75	6.83	1.00	7.4
1141.010	47.322	7.284	54.606	5080.00	15.93	3.94	58.54	.00	6.83	30.
335.990	.0026					.0027	.92	7.28	.86	7.4
1477.000	48.200	7.416	55.616	5080.00	15.74	3.85	59.46	.00	6.83	28.
HYDRAULIC JUMP										
1477.000	48.200	6.289	54.489	5080.00	17.89	4.97	59.46	.00	6.83	38.
HYDRAULIC DROP										
1502.000	48.890	6.960	55.850	5080.00	15.63	3.79	59.64	.00	6.96	42.
TRANS STR	.1000							6.960	1.000	
1502.100	48.900	4.751	53.651	5080.00	21.38	7.10	60.75	.00	6.85	50.
14.290	.0249					.0053	.08	4.75	1.73	2.

FILE: ngreenalt3.WSW

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WATER SURFACE PROFILE LISTING

Green Park
Alternative 1 for North Channel
1/25/02

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE	Critical Depth / Froude N	Flow Wid / Norm
1516.390	49.256	4.903	54.159	5080.00	20.72	6.67	60.83	.00	6.85	50.
18.132	.0249					.0047	.08	4.90	1.65	2.
1534.522	49.707	5.142	54.849	5080.00	19.76	6.06	60.91	.00	6.85	50.
14.375	.0249					.0040	.06	5.14	1.54	2.
1548.897	50.065	5.393	55.458	5080.00	18.84	5.51	60.97	.00	6.85	50.
11.095	.0249					.0035	.04	5.39	1.43	2.
1559.992	50.342	5.656	55.998	5080.00	17.96	5.01	61.01	.00	6.85	50.
8.189	.0249					.0030	.02	5.66	1.33	2.
1568.181	50.545	5.932	56.478	5080.00	17.13	4.55	61.03	.00	6.85	50.
5.579	.0249					.0026	.01	5.93	1.24	2.
1573.760	50.684	6.222	56.906	5080.00	16.33	4.14	61.05	.00	6.85	50.
3.209	.0249					.0022	.01	6.22	1.15	2.
1576.969	50.764	6.526	57.290	5080.00	15.57	3.76	61.05	.00	6.85	50.
1.031	.0249					.0019	.00	6.53	1.07	2.
1578.000	50.790	6.845	57.635	5080.00	14.84	3.42	61.06	.00	6.85	50.

COLLECTER SYSTEM
HEC-RAS MODEL

HEC-RAS Plan: Plan 01

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
South	2600	44.00	63.30	64.40	64.40	64.86	0.002739	5.69	8.30	9.19	0.96
South	2550	44.00	63.04	63.96	63.53	64.02	0.000384	2.06	21.98	25.76	0.38
South	2500	44.00	60.60	64.00		64.00	0.000004	0.49	93.39	30.93	0.05
South	2450	44.00	59.50	64.00		64.00	0.000003	0.44	105.78	28.00	0.04
South	2400	44.00	58.80	64.00		64.00	0.000001	0.36	132.40	30.91	0.03
South	2350	44.00	58.10	64.00		64.00	0.000001	0.30	159.28	32.97	0.02
South	2300	132.00	57.40	63.99		64.00	0.000005	0.75	187.99	35.02	0.05
South	2250	296.00	56.70	63.97		64.00	0.000018	1.51	210.51	35.94	0.10
South	2200	576.00	56.00	63.89		63.99	0.000050	2.62	236.04	36.81	0.16
South	2150	991.00	55.30	63.72		63.97	0.000116	4.16	255.09	36.58	0.25
South	2100	1528.00	54.50	63.46		63.93	0.000204	5.75	291.03	43.11	0.34
South	2050	2496.00	53.80	63.10		63.84	0.000326	7.45	373.28	56.58	0.43
South	2000	2496.00	53.40	61.95		63.70	0.000942	10.62	234.99	27.50	0.64
North	2550	274.00	63.50	65.39	65.39	66.06	0.002052	7.23	43.54	32.46	0.93
North	2500	274.00	60.80	61.77	62.66	65.28	0.020372	15.38	18.57	21.38	2.76
North	2450	274.00	59.10	63.99		64.07	0.000065	2.27	131.58	34.77	0.18
North	2400	274.00	58.70	64.01		64.06	0.000036	1.81	164.09	38.80	0.14
North	2350	274.00	57.80	64.02		64.05	0.000017	1.38	212.34	41.26	0.10
North	2300	454.00	57.10	63.99		64.04	0.000032	2.02	240.69	41.91	0.14
North	2250	684.00	56.50	63.92		64.03	0.000058	2.84	257.35	41.38	0.18
North	2200	968.00	55.80	63.83		64.02	0.000089	3.66	283.23	42.56	0.23
North	2150	1311.00	55.30	63.69		64.00	0.000136	4.65	301.02	42.79	0.28
North	2100	1717.00	54.50	63.53		63.96	0.000174	5.49	333.76	43.93	0.32
North	2050	2588.00	53.80	63.38		63.89	0.000204	6.16	464.71	66.01	0.35
North	2000	2588.00	53.40	61.74		63.72	0.001085	11.29	229.26	27.50	0.69
East System	2000	5080.00	53.40	61.80		63.68	0.000772	10.99	462.26	55.00	0.67
East System	1950	5080.00	53.20	60.02	60.02	63.47	0.001808	14.89	341.24	50.00	1.00
East System	1778	5080.00	52.29	58.72	59.11	62.60	0.002172	15.81	321.32	50.00	1.10
East System	1578	5080.00	50.79	57.63	57.63	61.06	0.001793	14.85	342.18	50.00	1.00

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Greenpark Junction
Project File : gpl.prj
Run Date and Time: 3/15/2002 10:16:30 AM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : w:\HYDRO\Greenpark HEC-RAS\gpl.p01

Geometry Title: Geom 01
Geometry File : w:\HYDRO\Greenpark HEC-RAS\gpl.g01

Flow Title : Flow 01
Flow File : w:\HYDRO\Greenpark HEC-RAS\gpl.f01

Plan Summary Information:
Number of: Cross Sections = 66 Mulitple Openings = 0
Culverts = 0 Inline Weirs = 0
Bridges = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Flow 01
Flow File : w:\HYDRO\Greenpark HEC-RAS\gpl.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Collector	SystemSouth	2600	44
Collector	SystemSouth	2350	44
Collector	SystemSouth	2300	132
Collector	SystemSouth	2250	296
Collector	SystemSouth	2200	576
Collector	SystemSouth	2150	991
Collector	SystemSouth	2100	1528
Collector	SystemSouth	2050	2496
Collector	SystemNorth	2550	274
Collector	SystemNorth	2350	274

Collector SystemNorth	2300	454
Collector SystemNorth	2250	684
Collector SystemNorth	2200	968
Collector SystemNorth	2150	1311
Collector SystemNorth	2100	1717
Collector SystemNorth	2050	2588
Collector SystemEast System	2000	5080

Boundary Conditions

River	Reach	Profile	Upstream	Downstre
Collector System	South	PF 1	Critical	
Collector System	North	PF 1	Critical	
Collector System	East System	PF 1		Critic

GEOMETRY DATA

Geometry Title: Geom 01
Geometry File : w:\HYDRO\Greenpark HEC-RAS\gpl.g01

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Collector System	South		Jct1
Collector System	North		Jct1
Collector System	East System	Jct1	

CROSS SECTION RIVER: Collector System
REACH: South RS: 2600

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
68	67.07	74	67	80	66	96	65	99	64
101	63.3	107	63.3	107	68				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
68	.013	101	.013	107	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
101	107	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2575.4

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
68.5	66.93	73.41	66.71	78.32	66.02	78.79	65.98	85.21	65.24
91.41	64.41	93.86	63.68	95.5	63.17	109.5	63.17	109.5	68

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
68.5	.013	95.5	.013	109.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
95.5	109.5	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2550

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
69	66.79	77	66	82	65	90	63.04	112	63.04
112	68								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
69	.013	90	.013	112	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
90	112	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2525.*

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
68	66.65	75.43	66.01	75.58	65.98	80.07	64.48	87.5	61.82
110.5	61.82	110.5	68						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
68	.013	87.5	.013	110.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
87.5	110.5	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2500

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	66.51	74	66	85	60.6	109	60.6	109	68

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	85	.013	109	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
85	109	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2475.*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	66.37	74.43	66.01	74.58	65.96	86.5	60.05	108	60.05
108	68								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	86.5	.013	108	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
86.5	108	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2450

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	66.23	75	66	88	59.5	107	59.5	107	68

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	107	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	107	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2425.*

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
      67   66.09      75    65.5      88   59.15   107.5   59.15   107.5      68

 Manning's n Values         num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
       67    .013       88    .013    107.5    .013

 Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
             88   107.5                  25        25        25             .1       .3

 CROSS SECTION           RIVER: Collector System
 REACH: South               RS: 2400

 INPUT
 Description:
 Station Elevation Data     num=        5
      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
       67   65.95       75     65       88    58.8      108    58.8      108      68

 Manning's n Values         num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
       67    .013       88    .013      108    .013

 Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
             88     108                  25        25        25             .1       .3

 CROSS SECTION           RIVER: Collector System
 REACH: South               RS: 2375.*

 INPUT
 Description:
 Station Elevation Data     num=        6
      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
       66   65.82    74.38   65.01    74.61   64.95       88   58.45    108.5   58.45
    108.5      68

 Manning's n Values         num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
       66    .013       88    .013    108.5    .013

 Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
             88   108.5                  25        25        25             .1       .3

 CROSS SECTION           RIVER: Collector System
 REACH: South               RS: 2350

 INPUT
 Description:
 Station Elevation Data     num=        5
      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
       65   65.68       74     65       88    58.1      109    58.1      109      68

 Manning's n Values         num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
       65    .013       88    .013      109    .013

 Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
             88     109                  25        25        25             .1       .3

 CROSS SECTION           RIVER: Collector System
 REACH: South               RS: 2325.*

 INPUT
 Description:
 Station Elevation Data     num=        6
      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
       66   65.54    72.29   65.09    74.61   64.44       88   57.75    109.5   57.75
    109.5      68

 Manning's n Values         num=        3
      Sta   n Val      Sta   n Val      Sta   n Val
       66    .013       88    .013    109.5    .013

 Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
             88   109.5                  25        25        25             .1       .3

 CROSS SECTION           RIVER: Collector System
 REACH: South               RS: 2300

 INPUT
```

Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	65.4	73	65	88	57.4	110	57.4	110	68

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	110	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	110	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2275.*

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	65.18	73	64.57	74	64.25	88	57.05	110	57.05
110	67								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	110	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	110	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2250

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	64.96	74	64	88	56.7	110	56.7	110	66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	110	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	110	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2225.*

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	64.74	74	64	88	56.35	110.5	56.35	110.5	66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	110.5	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	110.5	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2200

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
67	64.51	74	64	88	56	111	56	111	66

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
67	.013	88	.013	111	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
88	111	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: South RS: 2175.*

```
INPUT
Description:
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      67    64.29       74       64       75    63.71       88    55.65    111.5    55.65
   111.5     65.5

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      67     .013       88     .013    111.5     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
            88   111.5                 25       25       25             .1      .3

CROSS SECTION           RIVER: Collector System
REACH: South               RS: 2150

INPUT
Description:
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      67    64.07       75       64       88     55.3      112     55.3      112       65

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      67     .013       88     .013      112     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
            88     112                 25       25       25             .1      .3

CROSS SECTION           RIVER: Collector System
REACH: South               RS: 2125.*

INPUT
Description:
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      67    63.93       74     63.5       75     63.2       88     54.9    112.5     54.9
   112.5       65

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      67     .013       88     .013    112.5     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
            88   112.5                 25       25       25             .1      .3

CROSS SECTION           RIVER: Collector System
REACH: South               RS: 2100

INPUT
Description:
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      67    63.79       74       63       88     54.5      113     54.5      113       65

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      67     .013       88     .013      113     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
            88     113                 37.5       25       20             .1      .3

CROSS SECTION           RIVER: Collector System
REACH: South               RS: 2075.*

INPUT
Description:
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
     58.5    63.58    66.26    63.08    68.33    62.56       88    54.15    113.5    54.15
   113.5     64.5

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
     58.5     .013       88     .013    113.5     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
```

```
          88   113.5              37.5       25       20              .1        .3

CROSS SECTION          RIVER: Collector System
REACH: South              RS: 2050

INPUT
Description:
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      50    63.37       60       63       88     53.8      114     53.8      114       64

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      50     .013       88     .013      114     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          88     114              40.01       25       20              .1        .3

CROSS SECTION          RIVER: Collector System
REACH: South              RS: 2025.*

INPUT
Description:
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      69    62.93       74    62.75       88    58.15       88     53.6   114.75     53.6
  114.75     63.5

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      69     .013       88     .013   114.75     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          88  114.75              40.01       25       20              .1        .3

CROSS SECTION          RIVER: Collector System
REACH: South              RS: 2000

INPUT
Description:
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      88     62.5       88     53.4    115.5     53.4    115.5       63

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      88     .013       88     .013    115.5     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          88   115.5                0        0        0              .1        .3

CROSS SECTION          RIVER: Collector System
REACH: North              RS: 2550

INPUT
Description:
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      69    66.0_       78       65       94     63.5      107     63.5      107       65

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
      69     .013       94     .013      107     .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          94     107                25       25       25              .1        .3

CROSS SECTION          RIVER: Collector System
REACH: North              RS: 2525.*

INPUT
Description:
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
    68.5    65.92     71.7    65.32    76.96    64.46       92    62.15      107    62.15
     107       65

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
```

```
    68.5    .013      92    .013     107    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            92     107               25      25      25            .1      .3

CROSS SECTION          RIVER: Collector System
REACH: North           RS: 2500

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      68   65.82      71      65      90    60.8     107    60.8     107      65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
      68    .013      90    .013     107    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            90     107               25      25      25            .1      .3

CROSS SECTION          RIVER: Collector System
REACH: North           RS: 2475.*

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    67.5   65.72   70.43   64.87      89   59.95     107   59.95     107    65.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    67.5    .013      89    .013     107    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            89     107               25      25      25            .1      .3

CROSS SECTION          RIVER: Collector System
REACH: North           RS: 2450

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      67   65.62      88    59.1     107    59.1     107      66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
      67    .013      88    .013     107    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            88     107               25      25      25            .1      .3

CROSS SECTION          RIVER: Collector System
REACH: North           RS: 2425.*

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      67   65.52    87.5    58.9   108.5    58.9   108.5    65.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
      67    .013    87.5    .013   108.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          87.5   108.5               25      25      25            .1      .3

CROSS SECTION          RIVER: Collector System
REACH: North           RS: 2400

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
      67   65.42      87    58.7     110    58.7     110      66

Manning's n Values        num=       3
```

```
      Sta   n Val      Sta   n Val     Sta   n Val
       67    .013       87    .013      110    .013

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             87     110                 25       25       25            .1      .3

 CROSS SECTION          RIVER: Collector System
 REACH: North             RS: 2375.*

 INPUT
 Description:
 Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
     66.5    65.32       85    58.25      110    58.25      110       65

 Manning's n Values        num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
     66.5    .013       85    .013      110    .013

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             85     110                 25       25       25            .1      .3

 CROSS SECTION          RIVER: Collector System
 REACH: North             RS: 2350

 INPUT
 Description:
 Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
       66    65.22       83     57.8      110     57.8      110       65

 Manning's n Values        num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
       66    .013       83    .013      110    .013

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             83     110                 25       25       25            .1      .3

 CROSS SECTION          RIVER: Collector System
 REACH: North             RS: 2325.*

 INPUT
 Description:
 Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
       66    65.12     82.5    57.45      110    57.45      110       65

 Manning's n Values        num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
       66    .013     82.5    .013      110    .013

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           82.5     110                 25       25       25            .1      .3

 CROSS SECTION          RIVER: Collector System
 REACH: North             RS: 2300

 INPUT
 Description:
 Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
       66    65.02       82     57.1      110     57.1      110       65

 Manning's n Values        num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
       66    .013       82    .013      110    .013

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
             82     110                 25       25       25            .1      .3

 CROSS SECTION          RIVER: Collector System
 REACH: North             RS: 2275.*

 INPUT
 Description:
 Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
     66.5    64.92       82     56.8      110     56.8      110       65
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    66.5    .013       82    .013      110    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     110                  25          25       25             .1      .3

CROSS SECTION            RIVER: Collector System
REACH: North                RS: 2250

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      67   64.82       82    56.5      110    56.5      110      65

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      67    .013       82    .013      110    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     110                  25          25       25             .1      .3

CROSS SECTION            RIVER: Collector System
REACH: North                RS: 2225.*

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
    66.5   64.72       82   56.15      110   56.15      110      65

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    66.5    .013       82    .013      110    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     110                  25          25       25             .1      .3

CROSS SECTION            RIVER: Collector System
REACH: North                RS: 2200

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      66   64.62       82    55.8      110    55.8      110      65

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      66    .013       82    .013      110    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     110                  25          25       25             .1      .3

CROSS SECTION            RIVER: Collector System
REACH: North                RS: 2175.*

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
    66.5   64.52       82   55.55    110.5   55.55    110.5    64.5

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    66.5    .013       82    .013    110.5    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82   110.5                  25          25       25             .1      .3

CROSS SECTION            RIVER: Collector System
REACH: North                RS: 2150

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      67   64.42       82    55.3      111    55.3      111      64
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      67    .013       82    .013      111    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     111             22.5      25    32.5             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2125.*

INPUT
Description:
Station Elevation Data     num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      67   64.32       82    54.9    111.5    54.9    111.5      64

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      67    .013       82    .013    111.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82   111.5             22.5      25    32.5             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2100

INPUT
Description:
Station Elevation Data     num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      67   64.22       82    54.5      112    54.5      112      64

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      67    .013       82    .013      112    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
             82     112               20      25       30             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2075.*

INPUT
Description:
Station Elevation Data     num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
    58.5   64.21       85   54.15    115.5   54.15    115.5      64

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    58.5    .013       85    .013    115.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
             85   115.5               20      25       30             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2050

INPUT
Description:
Station Elevation Data     num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      50    64.2       88    53.8      119    53.8      119      64

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      50    .013       88    .013      119    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
             88     119             17.5      25       40             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2025.*

INPUT
Description:
Station Elevation Data     num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
```

```
      69   63.35      88   58.15      88    53.6  117.25    53.6  117.25    63.5

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      69    .013      88    .013   117.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           88  117.25              17.5      25      40             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: North               RS: 2000

INPUT
Description:
Station Elevation Data      num=        4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      88    62.5       88    53.4    115.5    53.4    115.5      63

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      88    .013      88    .013    115.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           88   115.5                 0       0       0             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 2000

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
    72.5      63    72.5    53.4      100    53.4    127.5    53.4    127.5    63.1

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
    72.5    .013    72.5    .013    127.5    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          72.5   127.5                25      25      25             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1975.*

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
   73.75    62.6   73.75    53.3      100    53.3  126.25    53.3  126.25   62.65

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
   73.75    .013   73.75    .013   126.25    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
         73.75  126.25                25      25      25             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1950

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75    62.2       75    53.2      100    53.2      125    53.2      125    62.2

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013      75    .013      125    .013

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57             .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1925.42*

INPUT
Description:
Station Elevation Data      num=        5
```

```
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75   62.03       75   53.07      100   53.07      125   53.07      125   62.03

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013       75    .013      125    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57              .1       .3

CROSS SECTION            RIVER: Collector System
REACH: East System         RS: 1900.85*

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75   61.86       75   52.94      100   52.94      125   52.94      125   61.86

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013       75    .013      125    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57              .1       .3

CROSS SECTION            RIVER: Collector System
REACH: East System         RS: 1876.28*

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75   61.69       75   52.81      100   52.81      125   52.81      125   61.69

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013       75    .013      125    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57              .1       .3

CROSS SECTION            RIVER: Collector System
REACH: East System         RS: 1851.71*

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75   61.51       75   52.68      100   52.68      125   52.68      125   61.51

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013       75    .013      125    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57              .1       .3

CROSS SECTION            RIVER: Collector System
REACH: East System         RS: 1827.14*

INPUT
Description:
Station Elevation Data      num=        5
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
      75   61.34       75   52.55      100   52.55      125   52.55      125   61.34

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
      75    .013       75    .013      125    .013

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           75     125              24.57   24.57   24.57              .1       .3

CROSS SECTION            RIVER: Collector System
REACH: East System         RS: 1802.57*

INPUT
Description:
```

```
Station Elevation Data     num=        5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      75    61.17       75    52.42      100    52.42      125    52.42      125    61.17

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
      75     .013       75     .013      125     .013

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           75      125              24.57   24.57   24.57              .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1778

INPUT
Description:
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      75       61       75    52.29      125    52.29      125       61

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
      75     .013       75     .013      125     .013

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           75      125                  25      25      25              .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1753.*

INPUT
Description:
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      75    60.88       75     52.1      125     52.1      125    60.88

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
      75     .013       75     .013      125     .013

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           75      125                  25      25      25              .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1728.*

INPUT
Description:
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      75    60.75       75    51.92      125    51.92      125    60.75

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
      75     .013       75     .013      125     .013

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           75      125                  25      25      25              .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1703.*

INPUT
Description:
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
      75    60.62       75    51.73      125    51.73      125    60.62

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
      75     .013       75     .013      125     .013

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           75      125                  25      25      25              .1       .3

CROSS SECTION           RIVER: Collector System
REACH: East System         RS: 1678.*

INPUT
```

Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
75	60.5	75	51.54	125	51.54	125	60.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
75	.013	75	.013	125	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	125	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: East System RS: 1653.*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
75	60.38	75	51.35	125	51.35	125	60.38

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
75	.013	75	.013	125	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	125	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: East System RS: 1628.*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
75	60.25	75	51.17	125	51.17	125	60.25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
75	.013	75	.013	125	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	125	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: East System RS: 1603.*

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
75	60.12	75	50.98	125	50.98	125	60.12

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
75	.013	75	.013	125	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	125	25	25	.1	.3

CROSS SECTION RIVER: Collector System
REACH: East System RS: 1578

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
75	60	75	50.79	125	50.79	125	60

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
75	.013	75	.013	125	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
75	125	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:Collector System

Reach	River Sta.	n1	n2	n3
South	2600	.013	.013	.013
South	2575.*	.013	.013	.013
South	2550	.013	.013	.013
South	2525.*	.013	.013	.013
South	2500	.013	.013	.013
South	2475.*	.013	.013	.013
South	2450	.013	.013	.013
South	2425.*	.013	.013	.013
South	2400	.013	.013	.013
South	2375.*	.013	.013	.013
South	2350	.013	.013	.013
South	2325.*	.013	.013	.013
South	2300	.013	.013	.013
South	2275.*	.013	.013	.013
South	2250	.013	.013	.013
South	2225.*	.013	.013	.013
South	2200	.013	.013	.013
South	2175.*	.013	.013	.013
South	2150	.013	.013	.013
South	2125.*	.013	.013	.013
South	2100	.013	.013	.013
South	2075.*	.013	.013	.013
South	2050	.013	.013	.013
South	2025.*	.013	.013	.013
South	2000	.013	.013	.013
North	2550	.013	.013	.013
North	2525.*	.013	.013	.013
North	2500	.013	.013	.013
North	2475.*	.013	.013	.013
North	2450	.013	.013	.013
North	2425.*	.013	.013	.013
North	2400	.013	.013	.013
North	2375.*	.013	.013	.013
North	2350	.013	.013	.013
North	2325.*	.013	.013	.013
North	2300	.013	.013	.013
North	2275.*	.013	.013	.013
North	2250	.013	.013	.013
North	2225.*	.013	.013	.013
North	2200	.013	.013	.013
North	2175.*	.013	.013	.013
North	2150	.013	.013	.013
North	2125.*	.013	.013	.013
North	2100	.013	.013	.013
North	2075.*	.013	.013	.013
North	2050	.013	.013	.013
North	2025.*	.013	.013	.013
North	2000	.013	.013	.013
East System	2000	.013	.013	.013
East System	1975.*	.013	.013	.013
East System	1950	.013	.013	.013
East System	1925.42*	.013	.013	.013
East System	1900.85*	.013	.013	.013
East System	1876.28*	.013	.013	.013
East System	1851.71*	.013	.013	.013
East System	1827.14*	.013	.013	.013
East System	1802.57*	.013	.013	.013
East System	1778	.013	.013	.013
East System	1753.*	.013	.013	.013
East System	1728.*	.013	.013	.013
East System	1703.*	.013	.013	.013
East System	1678.*	.013	.013	.013
East System	1653.*	.013	.013	.013
East System	1628.*	.013	.013	.013
East System	1603.*	.013	.013	.013
East System	1578	.013	.013	.013

SUMMARY OF REACH LENGTHS

River: Collector System

Reach	River Sta.	Left	Channel	Right
South	2600	25	25	25
South	2575.*	25	25	25
South	2550	25	25	25
South	2525.*	25	25	25
South	2500	25	25	25
South	2475.*	25	25	25
South	2450	25	25	25
South	2425.*	25	25	25
South	2400	25	25	25
South	2375.*	25	25	25
South	2350	25	25	25
South	2325.*	25	25	25
South	2300	25	25	25
South	2275.*	25	25	25
South	2250	25	25	25
South	2225.*	25	25	25
South	2200	25	25	25
South	2175.*	25	25	25
South	2150	25	25	25
South	2125.*	25	25	25
South	2100	37.5	25	20
South	2075.*	37.5	25	20
South	2050	40.01	25	20
South	2025.*	40.01	25	20
South	2000	0	0	0
North	2550	25	25	25
North	2525.*	25	25	25
North	2500	25	25	25
North	2475.*	25	25	25
North	2450	25	25	25
North	2425.*	25	25	25
North	2400	25	25	25
North	2375.*	25	25	25
North	2350	25	25	25
North	2325.*	25	25	25
North	2300	25	25	25
North	2275.*	25	25	25
North	2250	25	25	25
North	2225.*	25	25	25
North	2200	25	25	25
North	2175.*	25	25	25
North	2150	22.5	25	32.5
North	2125.*	22.5	25	32.5
North	2100	20	25	30
North	2075.*	20	25	30
North	2050	17.5	25	40
North	2025.*	17.5	25	40
North	2000	0	0	0
East System	2000	25	25	25
East System	1975.*	25	25	25
East System	1950	24.57	24.57	24.57
East System	1925.42*	24.57	24.57	24.57
East System	1900.85*	24.57	24.57	24.57
East System	1876.28*	24.57	24.57	24.57
East System	1851.71*	24.57	24.57	24.57
East System	1827.14*	24.57	24.57	24.57
East System	1802.57*	24.57	24.57	24.57
East System	1778	25	25	25
East System	1753.*	25	25	25
East System	1728.*	25	25	25
East System	1703.*	25	25	25
East System	1678.*	25	25	25
East System	1653.*	25	25	25
East System	1628.*	25	25	25
East System	1603.*	25	25	25
East System	1578	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Collector System

Reach	River Sta.	Contr.	Expan.
South	2600	.1	.3

South	2575.*	.1	.3
South	2550	.1	.3
South	2525.*	.1	.3
South	2500	.1	.3
South	2475.*	.1	.3
South	2450	.1	.3
South	2425.*	.1	.3
South	2400	.1	.3
South	2375.*	.1	.3
South	2350	.1	.3
South	2325.*	.1	.3
South	2300	.1	.3
South	2275.*	.1	.3
South	2250	.1	.3
South	2225.*	.1	.3
South	2200	.1	.3
South	2175.*	.1	.3
South	2150	.1	.3
South	2125.*	.1	.3
South	2100	.1	.3
South	2075.*	.1	.3
South	2050	.1	.3
South	2025.*	.1	.3
South	2000	.1	.3
North	2550	.1	.3
North	2525.*	.1	.3
North	2500	.1	.3
North	2475.*	.1	.3
North	2450	.1	.3
North	2425.*	.1	.3
North	2400	.1	.3
North	2375.*	.1	.3
North	2350	.1	.3
North	2325.*	.1	.3
North	2300	.1	.3
North	2275.*	.1	.3
North	2250	.1	.3
North	2225.*	.1	.3
North	2200	.1	.3
North	2175.*	.1	.3
North	2150	.1	.3
North	2125.*	.1	.3
North	2100	.1	.3
North	2075.*	.1	.3
North	2050	.1	.3
North	2025.*	.1	.3
North	2000	.1	.3
East System	2000	.1	.3
East System	1975.*	.1	.3
East System	1950	.1	.3
East System	1925.42*	.1	.3
East System	1900.85*	.1	.3
East System	1876.28*	.1	.3
East System	1851.71*	.1	.3
East System	1827.14*	.1	.3
East System	1802.57*	.1	.3
East System	1778	.1	.3
East System	1753.*	.1	.3
East System	1728.*	.1	.3
East System	1703.*	.1	.3
East System	1678.*	.1	.3
East System	1653.*	.1	.3
East System	1628.*	.1	.3
East System	1603.*	.1	.3
East System	1578	.1	.3

FREEBOARD TABLE

FREEBOARD TABLE NORTH BOX

Reach	River Sta	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Depth (ft)	E.G. Elev (ft)	Vel Chnl (ft/s)	Froude # Chl	Freeboard	Flow Type	Minimum Top of Channel (ft)
South	2600	44	**63.3**	64.4	**1.1**	64.86	5.69	0.96	**1.00 ft**	Sub	**65.4**
South	2550	44	**63.04**	63.96	**0.92**	64.02	2.06	0.38	**1.00 ft**	Sub	**65.0**
South	2500	44	**60.6**	64	**3.4**	64	0.49	0.05	**1.00 ft**	Sub	**65.0**
South	2450	44	**59.5**	64	**4.5**	64	0.44	0.04	**1.00 ft**	Sub	**65.0**
South	2400	44	**58.8**	64	**5.2**	64	0.36	0.03	**1.00 ft**	Sub	**65.0**
South	2350	44	**58.1**	64	**5.9**	64	0.3	0.02	**1.04 ft**	Sub	**65.0**
South	2300	132	**57.4**	63.99	**6.59**	64	0.75	0.05	**1.17 ft**	Sub	**65.2**
South	2250	296	**56.7**	63.97	**7.27**	64	1.51	0.1	**1.32 ft**	Sub	**65.3**
South	2200	576	**56**	63.89	**7.89**	63.99	2.62	0.16	**1.47 ft**	Sub	**65.4**
South	2150	991	**55.3**	63.72	**8.42**	63.97	4.16	0.25	**1.60 ft**	Sub	**65.3**
South	2100	1528	**54.5**	63.46	**8.96**	63.93	5.75	0.34	**1.75 ft**	Sub	**65.2**
South	2050	2496	**53.8**	63.1	**9.3**	63.84	7.45	0.43	**1.84 ft**	Sub	**64.9**
South	2000	2496	**53.4**	61.95	**8.55**	63.7	10.62	0.64	**1.64 ft**	Sub	**63.6**
North	2550	274	**63.5**	65.39	**1.89**	66.06	7.23	0.93	**1.00 ft**	Sub	**66.4**
North	2500	274	**60.8**	61.77	**0.97**	65.28	15.38	2.76	**1.06 ft**	Super	**62.8**
North	2450	274	**59.1**	63.99	**4.89**	64.07	2.27	0.18	**1.00 ft**	Sub	**65.0**
North	2400	274	**58.7**	64.01	**5.31**	64.06	1.81	0.14	**1.00 ft**	Sub	**65.0**
North	2350	274	**57.8**	64.02	**6.22**	64.05	1.38	0.1	**1.10 ft**	Sub	**65.1**
North	2300	454	**57.1**	63.99	**6.89**	64.04	2.02	0.14	**1.24 ft**	Sub	**65.2**
North	2250	684	**56.5**	63.92	**7.42**	64.03	2.84	0.18	**1.35 ft**	Sub	**65.3**
North	2200	968	**55.8**	63.83	**8.03**	64.02	3.66	0.23	**1.50 ft**	Sub	**65.3**
North	2150	1311	**55.3**	63.69	**8.39**	64	4.65	0.28	**1.59 ft**	Sub	**65.3**
North	2100	1717	**54.5**	63.53	**9.03**	63.96	5.49	0.32	**1.77 ft**	Sub	**65.3**
North	2050	2588	**53.8**	63.38	**9.58**	63.89	6.16	0.35	**1.93 ft**	Sub	**65.3**
North	2000	2588	**53.4**	61.74	**8.34**	63.72	11.29	0.69	**1.58 ft**	Sub	**63.3**
East System	2000	5080	**53.4**	61.8	**8.4**	63.68	10.99	0.67	**1.60 ft**	Sub	**63.4**
East System	1950	5080	**53.2**	60.02	**6.82**	63.47	14.89	1	**1.42 ft**	Super	**61.4**
East System	1778	5080	**52.29**	58.72	**6.43**	62.6	15.81	1.1	**1.40 ft**	Super	**60.1**
East System	1578	5080	**50.79**	57.63	**6.84**	61.06	14.85	1	**1.42 ft**	Super	**59.1**

Supercritical Flow (Froude >1)

$F_b=1+.025*V*d^{(1/3)}$

Subcritical Flow (Froude <1)

$F_b=.5+((V^2)/2g)$

OUTLET SYSTEM
HEC-RAS MODEL

HEC-RAS Plan: Plan 01 River: North Box outlet Reach: 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	690	5080.00	46.00	50.65	51.80	55.17	0.003439	17.06	297.73	64.00	1.39
1	675	5080.00	45.90	48.52	50.38	54.83	0.042696	20.36	257.84	116.82	2.22
1	652	5080.00	46.20	52.64	49.68	52.68	0.000130	2.01	3187.83	783.00	0.14
1	632	5080.00	47.00	52.64	49.26	52.67	0.000097	1.66	3630.15	833.00	0.12
1	256	5834.00	50.37	51.94	51.94	52.60	0.023201	6.79	915.85	680.25	0.96
1	239	6470.00	44.37	48.32		48.44	0.008406	3.53	2399.09	1317.79	0.55
1	238	6470.00	42.37	44.30	44.26	44.89	0.021798	7.56	1071.17	833.06	0.96

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Northbox Outlet
Project File : nbox.prj
Run Date and Time: 3/19/2002 9:27:29 AM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : C:\HEC\RAS\nbox.p01

Geometry Title: Geom 01
Geometry File : C:\HEC\RAS\nbox.g01

Flow Title : Flow 01
Flow File : C:\HEC\RAS\nbox.f01

Plan Summary Information:
Number of: Cross Sections = 21 Mulitple Openings = 0
Culverts = 0 Inline Weirs = 0
Bridges = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Flow 01
Flow File : C:\HEC\RAS\nbox.f01

Flow Data (cfs)

River	Reach	RS	PF 1
North Box outlet	1	690	5080
North Box outlet	1	256	5834
North Box outlet	1	239	6470

Boundary Conditions

River	Reach	Profile	Upstream	Downstre
North Box outlet	1	PF 1	Known WS = 50.652	Known WS =

GEOMETRY DATA

Geometry Title: Geom 01
Geometry File : C:\HEC\RAS\nbox.g01

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 690

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
968	51	968	46	1032	46	1032	51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
968	.013	968	.013	1032	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
968	1032	15	15	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 675

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
910	51	953	48	953	45.9	1046	45.9	1046	47
1100	52								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
910	.028	953	.028	1046	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
953	1046	23.02	23.02	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 652

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
677	51	885	48.5	922	47	1000	46.2	1084	47
1134	48.5	1460	49.5						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
677	.028	922	.028	1084	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
922	1084	20	20	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
677	885	48.5	1134	1460	48.5

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 632

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
677	50	687	48.1	867	48.1	960	47	1000	47
1019	47	1157	48.1	1510	50				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
677	.028	960	.028	1019	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
960	1019	20	20	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
677	867	48.1	1157	1510	48.1

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 256

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
750	51.77	910.51	50.37	1380	50.37	1508.06	54.37

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
750	.045	910.51	.045	1380	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
910.51	1380	45	45	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 251.75*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
747.5	51.42	788.76	50.32	809.04	50.27	1003.8	49.78	1008.34	49.77
1043.31	49.68	1054.5	49.66	1057.29	49.65	1169.88	49.37	1170.13	50.37
1174.38	49.37	1178.38	48.87	1530.5	48.87	1533	49.37	1599	50.32
1695.05	53.32								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
747.5	.054	1169.88	.045	1599	.04	1695.05	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1169.88	1599	45	45	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 247.5*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
745	51.07	811.84	49	844.69	48.97	1160.2	48.65	1167.56	48.64
1224.21	48.58	1242.33	48.56	1246.86	48.56	1429.26	48.37	1429.76	50.37
1438.26	48.37	1446.26	47.37	1681	47.37	1686	48.37	1818	50.27
1882.03	52.27								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
745	.062	1429.26	.045	1818	.04	1882.03	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1429.26	1818	45	45	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 243.25*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
742.5	50.72	834.92	47.69	880.35	47.67	1316.6	47.51	1326.78	47.5
1405.1	47.47	1430.17	47.47	1436.43	47.46	1688.63	47.37	1689.38	50.37
1702.13	47.37	1714.13	45.87	1831.5	45.87	1839	47.37	2037	50.22
2069.02	51.22								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
742.5	.071	1688.63	.045	2037	.04	2069.02	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1688.63	2037	45	45	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 239

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
740	50.37	858	46.37	916	46.37	1473	46.37	1486	46.37
1586	46.37	1618	46.37	1626	46.37	1948	46.37	1949	50.37
1966	46.37	1982	44.37	1992	46.37	2256	50.17		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
740	.08	1948	.045	2256	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1948	2256	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.916*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
725	50.04	814.22	46.97	837.69	46.2	893.08	46.19	1015.49	46.16
1425.03	46.05	1437.45	46.05	1488.58	46.04	1532.95	46.04	1563.51	46.04
1571.15	46.04	1878.67	46.04	1879.58	49.7	1895.17	46.04	1909.83	44.2
1914.42	44.2	1915.25	44.2	1918.42	44.2	1927.58	46.04	2169.58	49.52
2189.5	49.69	2232.83	49.77						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
725	.077	1878.67	.045	2169.58	.04	2232.83	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1878.67	2169.58	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.833*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
710	49.7	795.02	46.73	817.39	46.03	870.17	46	986.81	45.95
1377.06	45.74	1388.89	45.73	1437.62	45.7	1479.9	45.7	1509.02	45.7
1516.3	45.7	1809.33	45.7	1810.17	49.04	1824.33	45.7	1837.67	44.04
1846.83	44.04	1848.5	44.04	1854.83	44.04	1863.17	45.7	2083.17	48.87
2123	49.2	2209.67	49.37						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
710	.074	1809.33	.045	2083.17	.04	2209.67	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1809.33	2083.17	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.75*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
695	49.37	775.82	46.49	797.08	45.86	847.25	45.82	958.13	45.74
1329.09	45.42	1340.34	45.41	1386.65	45.37	1426.85	45.37	1454.53	45.37
1461.45	45.37	1740	45.37	1740.75	48.37	1753.5	45.37	1765.5	43.87
1779.25	43.87	1781.75	43.87	1791.25	43.87	1798.75	45.37	1996.75	48.22
2056.5	48.72	2186.5	48.97						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
695	.071	1740	.045	1996.75	.04	2186.5	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1740	1996.75	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.666*

INPUT

Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
680	49.04	756.62	46.26	776.77	45.68	824.34	45.64	929.45	45.54
1281.12	45.1	1291.79	45.09	1335.69	45.04	1373.79	45.04	1400.04	45.04
1406.6	45.04	1670.67	45.04	1671.33	47.7	1682.67	45.04	1693.33	43.7
1711.67	43.7	1715	43.7	1727.67	43.7	1734.33	45.04	1910.33	47.57
1990	48.24	2163.33	48.57						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
680	.068	1670.67	.045	1910.33	.04	2163.33	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1670.67	1910.33	31.76	46.22	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.583*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
665	48.7	737.41	46.02	756.46	45.51	801.42	45.46	900.77	45.33
1233.16	44.79	1243.23	44.77	1284.73	44.7	1320.74	44.7	1345.55	44.7
1351.75	44.7	1601.33	44.7	1601.92	47.04	1611.83	44.7	1621.17	43.54
1644.08	43.54	1648.25	43.54	1664.08	43.54	1669.92	44.7	1823.92	46.92
1923.5	47.75	2140.17	48.17						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
665	.065	1601.33	.045	1823.92	.04	2140.17	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1601.33	1823.92	31.76	46.22	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.5*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
650	48.37	718.21	45.79	736.16	45.34	778.5	45.27	872.09	45.12
1185.19	44.47	1194.68	44.45	1233.77	44.37	1267.69	44.37	1291.06	44.37
1296.9	44.37	1532	44.37	1532.5	46.37	1541	44.37	1549	43.37
1576.5	43.37	1581.5	43.37	1600.5	43.37	1605.5	44.37	1737.5	46.27
1857	47.27	2117	47.77						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
650	.062	1532	.045	1737.5	.04	2117	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1532	1737.5	31.76	46.22	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.416*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
635	48.04	699.01	45.55	715.85	45.17	755.59	45.09	843.41	44.91
1137.22	44.15	1146.13	44.13	1182.81	44.04	1214.64	44.04	1236.57	44.04
1242.05	44.04	1462.67	44.04	1463.08	45.7	1470.17	44.04	1476.83	43.2
1508.92	43.2	1514.75	43.2	1536.92	43.2	1541.08	44.04	1651.08	45.62
1790.5	46.79	2093.83	47.37						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
635	.06	1462.67	.045	1651.08	.04	2093.83	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1462.67	1651.08	31.76	46.22	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.333*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
620	47.7	679.81	45.31	695.54	45	732.67	44.91	814.72	44.7
1089.25	43.84	1097.57	43.81	1131.85	43.7	1161.59	43.7	1182.08	43.7
1187.2	43.7	1393.33	43.7	1393.67	45.04	1399.33	43.7	1404.67	43.04
1441.33	43.04	1448	43.04	1473.33	43.04	1476.67	43.7	1564.67	44.97
1724	46.3	2070.67	46.97						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
620	.057	1393.33	.045	1564.67	.04	2070.67	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1393.33	1564.67	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.25*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
605	47.37	660.61	45.08	675.23	44.83	709.76	44.72	786.04	44.49
1041.28	43.52	1049.02	43.49	1080.88	43.37	1108.54	43.37	1127.58	43.37
1132.35	43.37	1324	43.37	1324.25	44.37	1328.5	43.37	1332.5	42.87
1373.75	42.87	1381.25	42.87	1409.75	42.87	1412.25	43.37	1478.25	44.32
1657.5	45.82	2047.5	46.57						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
605	.054	1324	.045	1478.25	.04	2047.5	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1324	1478.25	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.166*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
590	47.04	641.4	44.84	654.93	44.65	686.84	44.54	757.36	44.29
993.31	43.2	1000.46	43.17	1029.92	43.04	1055.49	43.04	1073.09	43.04
1077.5	43.04	1254.67	43.04	1254.83	43.7	1257.67	43.04	1260.33	42.7
1306.17	42.7	1314.5	42.7	1346.17	42.7	1347.83	43.04	1391.83	43.67
1591	45.34	2024.33	46.17						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
590	.051	1254.67	.045	1391.83	.04	2024.33	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1254.67	1391.83	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238.083*

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
575	46.7	622.2	44.61	634.62	44.48	663.92	44.36	728.68	44.08
945.34	42.89	951.91	42.85	978.96	42.7	1002.44	42.7	1018.6	42.7
1022.65	42.7	1185.33	42.7	1185.42	43.04	1186.83	42.7	1188.17	42.54
1238.58	42.54	1247.75	42.54	1282.58	42.54	1283.42	42.7	1305.42	43.02
1524.5	44.85	2001.17	45.77						

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
575	.048	1185.33	.045	1305.42	.04	2001.17	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1185.33	1305.42	31.76	46.22	45.24	.1	.3

CROSS SECTION RIVER: North Box outlet
REACH: 1 RS: 238

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
560	46.37	603	44.37	700	43.87	928	42.37	1116	42.37
1171	42.37	1181	42.37	1219	42.37	1458	44.37	1978	45.37

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
560	.045	1116	.045	1219	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
1116	1219	0	0	0	.1	.3

SUMMARY OF MANNING'S N VALUES

River:North Box outlet

Reach	River Sta.	n1	n2	n3	n4
1	690	.013	.013	.013	
1	675	.028	.028	.028	
1	652	.028	.028	.028	
1	632	.028	.028	.028	
1	256	.045	.045	.04	
1	251.75*	.054	.045	.04	.04
1	247.5*	.062	.045	.04	.04
1	243.25*	.071	.045	.04	.04
1	239	.08	.045	.04	
1	238.916*	.077	.045	.04	.04
1	238.833*	.074	.045	.04	.04
1	238.75*	.071	.045	.04	.04
1	238.666*	.068	.045	.04	.04
1	238.583*	.065	.045	.04	.04
1	238.5*	.062	.045	.04	.04
1	238.416*	.06	.045	.04	.04
1	238.333*	.057	.045	.04	.04
1	238.25*	.054	.045	.04	.04
1	238.166*	.051	.045	.04	.04
1	238.083*	.048	.045	.04	.04
1	238	.045	.045	.04	

SUMMARY OF REACH LENGTHS

River: North Box outlet

Reach	River Sta.	Left	Channel	Right
1	690	15	15	15
1	675	23.02	23.02	23.02
1	652	20	20	20
1	632	20	20	20
1	256	45	45	45
1	251.75*	45	45	45
1	247.5*	45	45	45
1	243.25*	45	45	45
1	239	31.76	46.22	45.24
1	238.916*	31.76	46.22	45.24
1	238.833*	31.76	46.22	45.24
1	238.75*	31.76	46.22	45.24
1	238.666*	31.76	46.22	45.24
1	238.583*	31.76	46.22	45.24
1	238.5*	31.76	46.22	45.24
1	238.416*	31.76	46.22	45.24
1	238.333*	31.76	46.22	45.24
1	238.25*	31.76	46.22	45.24
1	238.166*	31.76	46.22	45.24
1	238.083*	31.76	46.22	45.24
1	238	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: North Box outlet

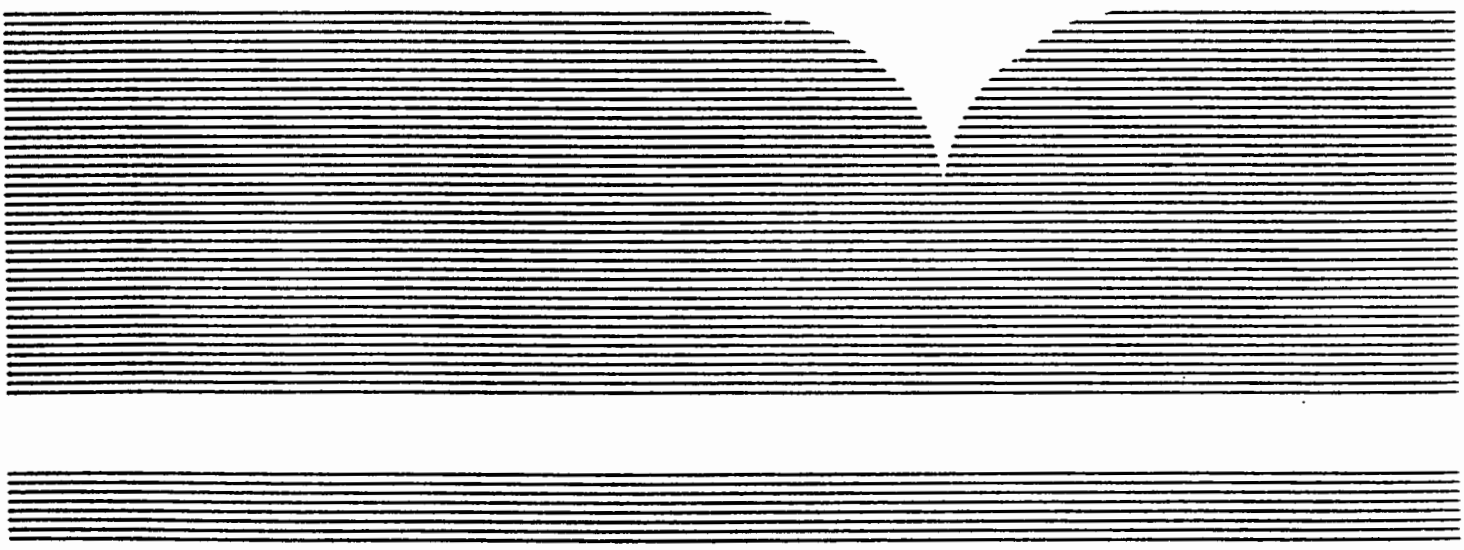
Reach	River Sta.	Contr.	Expan.
1	690	.1	.3
1	675	.1	.3
1	652	.1	.3
1	632	.1	.3
1	256	.1	.3
1	251.75*	.1	.3
1	247.5*	.1	.3
1	243.25*	.1	.3
1	239	.1	.3
1	238.916*	.1	.3
1	238.833*	.1	.3
1	238.75*	.1	.3
1	238.666*	.1	.3
1	238.583*	.1	.3
1	238.5*	.1	.3
1	238.416*	.1	.3
1	238.333*	.1	.3
1	238.25*	.1	.3
1	238.166*	.1	.3
1	238.083*	.1	.3
1	238	.1	.3

PB89-218424

DESIGN OF RIPRAP REVETMENT

SUTRON CORPORATION
HERNDON, VA

MAR 89



U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
NTIS

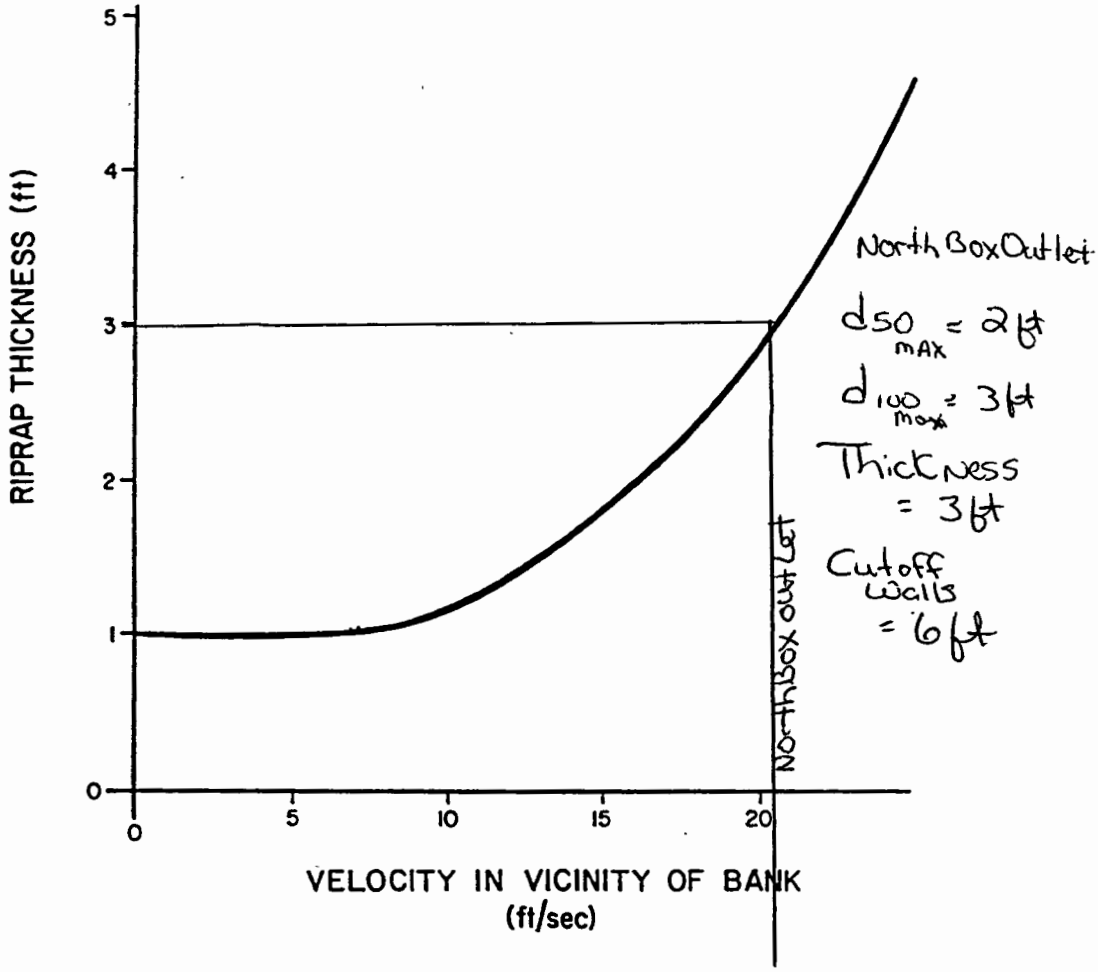


Figure 57. Required blanket thickness as a function of flow velocity.

Rock Grading: Table 6 provides guidelines for rock gradation in grouted riprap installations. Six size classes are listed.

Rock Quality: Rock used in grouted rock slope-protection is usually the same as that used in ordinary rock slope-protection. However, the specifications for specific gravity and hardness may be lowered if necessary as the rocks are protected by the surrounding grout.

In addition, the rock used in grouted riprap installations should be free of fines in order that penetration of grout may be achieved.

Grout Quality and Characteristics: Grout should consist of good strength concrete using a maximum aggregate size of 3/4 in and a slump of 3 to 4 in (7.6 to 10.2 cm). Sand mixes may be used where roughness of the grout surface is unnecessary, provided sufficient cement is added to give good strength and workability.

The volume of grout required will be that necessary to provide penetration to the depths shown in table 6.

The finished grout should leave face stones exposed for one-fourth to one-third their depth and the surface of the grout should expose a matrix of coarse aggregate.

6.3 GROUTED ROCK

Grouted rock revetment consists of rock slope-protection having voids filled with concrete grout to form a monolithic armor. See section 2.5 for additional descriptive information and general performance characteristics for grouted rock. Sample specifications for components of grouted rock revetments are provided in appendix A.

6.3.1 Design Guidelines for Grouted Rock

Components of grouted rock riprap design include layout of a general scheme or concept, bank preparation, bank slope, rock size and blanket thickness, rock grading, rock quality, grout quality, edge treatment, filter design, and pressure relief.

General: Grouted riprap designs are rigid monolithic bank protection schemes. When complete, they form a continuous surface. A typical grouted riprap section is shown in figure 56.

Grouted riprap should extend from below the anticipated channel bed scour depth to the design high water level plus additional height for freeboard (see section 3.6.2). The longitudinal extent of protection should be as described in section 3.6.1.

During the design phase for a grouted riprap revetment, special attention needs to be paid to edge treatment, foundation design, and mechanisms for hydrostatic pressure relief. Each of these items is discussed below.

Bank and Foundation Preparation: The bank should be prepared by first clearing all trees and debris from the bank, and grading the bank surface to the desired slope. In general, the graded surface should not deviate from the specified slope line by more than six in (15.2 cm). However, local depressions larger than this can be accommodated since initial placement of filter material and/or rock for the revetment will fill these depressions.

Since grouted riprap is rigid but not extremely strong, support by the embankment must be maintained. To form a firm foundation, it is recommended that the bank surface be tamped or lightly compacted. Care must be taken during bank compaction to maintain a soil permeability similar to that of the natural, undisturbed bank material. The foundation for the grouted riprap revetment should have a bearing capacity sufficient to support either the dry weight of the revetment alone, or the submerged weight of the revetment plus the weight of the water in the wedge above the revetment for design conditions, whichever is greater.

Any large boulders or debris found buried near the edges of the revetment should be removed.

Bank Slope: Bank slopes for grouted riprap revetments should not exceed 1.5:1.

Rock Size and Blanket Thickness: Blanket thickness and rock size requirements for grouted riprap installations are interrelated. Figure 57 illustrates a relationship between the design velocity and the required riprap blanket thickness for grouted riprap designs. The median rock size in the revetment should not exceed 0.67 times the blanket thickness. The largest rock used in the revetment should not exceed the blanket thickness.

```
T1 Green Park Holdings, LLC                                                0
T2 Culvert from I-15 South to Main South Box, 482cfs
T3 File: gpsb588  By Alex Kingston
SO    1000.0002265.540  1                          2275.735
R     1147.4402266.500  1       .013                            80.454    .000 2
R     1950.5702269.710  1       .013                             0.000    .000 0
R     2100.0002270.310  1       .013                             0.000    .000 0
R     2118.6302270.880  1       .013                           -55.024    .000 1
TS    2230.4502274.310  2       .013                           -36.188
R     2337.9302277.600  2       .013                             0.000    .000 0
R     2530.8202279.460  2       .013                             0.000    .000 0
WE    2530.8202279.460  3       .500
R     2560.8202279.960  3       .025                             0.000    .000 0
SH    2560.8202279.960  3                          2283.960
CD    2  3   1    .500   4.000   24.500  .000  .000   .00
CD    3  1   0    .000   6.000   30.000  .330  .330   .00
CD    1  6   0    .000             .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
PTS   121   .000   .000 10.000   .000 10.000  4.000  9.820  4.530  9.490  5.000
PTS         9.000  5.390  8.500  5.590  8.000  5.730  7.520  5.830  7.000  5.930
PTS         6.000  6.050  5.000  6.090  4.000  6.050  3.000  5.930  2.480  5.830
PTS         2.000  5.730  1.500  5.590  1.000  5.390   .510  5.000   .180  4.530
PTS          .000  4.000
Q             482.000   .0
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FILE: gpsb588.WSW W S P G W - CIVILDESIGN Version 14.05 PAGE 1

Program Package Serial Number: 1439

WATER SURFACE PROFILE LISTING Date: 3-29-2002 Time:11: 1:58

Green Park Holdings, LLC
Culvert from I-15 South to Main South Box, 482cfs
File: gpsb588 By Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2265.540	10.195	2275.735	482.00	8.50	1.12	2276.86	.00	4.15	.00		1		0 .0
147.440	.0065					.0023	.34	.00	.00	3.304	.013			IR-COV
1147.440	2266.500	9.904	2276.404	482.00	8.50	1.12	2277.53	.00	4.15	.00		1		0 .0
803.130	.0040					.0023	1.87	9.90	.00	3.939	.013			IR-COV
1950.570	2269.710	8.568	2278.278	482.00	8.50	1.12	2279.40	.00	4.15	.00		1		0 .0
149.430	.0040					.0023	.35	8.57	.00	3.932	.013			IR-COV
2100.000	2270.310	8.316	2278.626	482.00	8.50	1.12	2279.75	.00	4.15	.00		1		0 .0
18.630	.0306					.0023	.04	.00	.00	1.932	.013			IR-COV
2118.630	2270.880	8.022	2278.901	482.00	8.50	1.12	2280.02	.00	4.15	.00		1		0 .0
TRANS STR	.0307					.0023	.26	.00	.00		.013			IR-COV
2230.450	2274.310	5.601	2279.911	482.00	5.02	.39	2280.30	.00	2.32	24.50	4.000	24.500	.00	1 .5
54.305	.0306					.0011	.06	5.60	.45	1.07	.013	.00	.00	BOX
2284.755	2275.972	4.000	2279.972	482.00	5.02	.39	2280.36	.00	2.32	24.50	4.000	24.500	.00	1 .5
4.903	.0306					.0006	.00	4.00	.45	1.07	.013	.00	.00	BOX
2289.658	2276.123	3.813	2279.936	482.00	5.27	.43	2280.37	.00	2.32	24.50	4.000	24.500	.00	1 .5
2.391	.0306					.0007	.00	3.81	.48	1.07	.013	.00	.00	BOX

---------- WARNING - Flow depth near top of box conduit ----------

FILE: gpsb588.WSW W S P G W - CIVILDESIGN Version 14.05 PAGE 2

Program Package Serial Number: 1439

WATER SURFACE PROFILE LISTING Date: 3-29-2002 Time:11: 1:58

Green Park Holdings, LLC
Culvert from I-15 South to Main South Box, 482cfs
File: gpsb588 By Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or I.D.	Base Wt ZL	ZR	No Wth Prs/Pip	L/Elem	Ch Slope	SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	Type Ch
2292.049	2276.196	3.721	2279.917	482.00	5.40	.45	2280.37	.00	2.32	24.50	4.000	24.500	.00	1	.5									
HYDRAULIC JUMP																								
				WARNING - Flow depth near top of box conduit																				
2292.049	2276.196	1.329	2277.524	482.00	15.12	3.55	2281.07	.00	2.32	24.50	4.000	24.500	.00	1	.5									
.542	.0306					.0155	.01	1.33	2.33	1.07	.013	.00	.00	BOX										
2292.590	2276.212	1.334	2277.546	482.00	15.05	3.52	2281.06	.00	2.32	24.50	4.000	24.500	.00	1	.5									
15.689	.0306					.0144	.23	1.33	2.32	1.07	.013	.00	.00	BOX										
2308.279	2276.692	1.399	2278.092	482.00	14.35	3.20	2281.29	.00	2.32	24.50	4.000	24.500	.00	1	.5									
12.224	.0306					.0124	.15	1.40	2.16	1.07	.013	.00	.00	BOX										
2320.503	2277.067	1.468	2278.534	482.00	13.68	2.91	2281.44	.00	2.32	24.50	4.000	24.500	.00	1	.5									
9.689	.0306					.0107	.10	1.47	2.01	1.07	.013	.00	.00	BOX										
2330.192	2277.363	1.539	2278.903	482.00	13.05	2.64	2281.55	.00	2.32	24.50	4.000	24.500	.00	1	.5									
7.738	.0306					.0093	.07	1.54	1.87	1.07	.013	.00	.00	BOX										
2337.930	2277.600	1.614	2279.214	482.00	12.44	2.40	2281.62	.00	2.32	24.50	4.000	24.500	.00	1	.5									
63.092	.0096					.0082	.52	1.61	1.74	1.55	.013	.00	.00	BOX										
2401.022	2278.208	1.663	2279.871	482.00	12.08	2.27	2282.14	.00	2.32	24.50	4.000	24.500	.00	1	.5									
53.848	.0096					.0073	.39	1.66	1.67	1.55	.013	.00	.00	BOX										

Green Park Holdings, LLC
Culvert from I-15 South to Main South Box, 482cfs
File: gpsb588 By Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2454.870	2278.727	1.744	2280.471	482.00	11.52	2.06	2282.53	.00	2.32	24.50	4.000	24.500	.00	1 .5
30.910	.0096					.0063	.20	1.74	1.55	1.55	.013	.00	.00	BOX
2485.780	2279.025	1.829	2280.854	482.00	10.98	1.87	2282.73	.00	2.32	24.50	4.000	24.500	.00	1 .5
19.485	.0096					.0055	.11	1.83	1.45	1.55	.013	.00	.00	BOX
2505.265	2279.213	1.918	2281.132	482.00	10.47	1.70	2282.83	.00	2.32	24.50	4.000	24.500	.00	1 .5
12.502	.0096					.0048	.06	1.92	1.35	1.55	.013	.00	.00	BOX
2517.768	2279.334	2.012	2281.346	482.00	9.98	1.55	2282.89	.00	2.32	24.50	4.000	24.500	.00	1 .5
7.692	.0096					.0041	.03	2.01	1.25	1.55	.013	.00	.00	BOX
2525.460	2279.408	2.110	2281.518	482.00	9.52	1.41	2282.93	.00	2.32	24.50	4.000	24.500	.00	1 .5
4.101	.0096					.0036	.01	2.11	1.17	1.55	.013	.00	.00	BOX
2529.561	2279.448	2.213	2281.661	482.00	9.07	1.28	2282.94	.00	2.32	24.50	4.000	24.500	.00	1 .5
1.259	.0096					.0031	.00	2.21	1.09	1.55	.013	.00	.00	BOX
2530.820	2279.460	2.322	2281.782	482.00	8.65	1.16	2282.94	.00	2.32	24.50	4.000	24.500	.00	1 .5
WALL	ENTRANCE													
2530.820	2279.460	3.444	2282.904	482.00	4.49	.31	2283.22	.00	1.99	32.27	6.000	30.000	.33	0 .0
8.147	.0167					.0015	.01	3.44	.43	1.60	.025	.00	.33	TRAP
2538.967	2279.596	3.289	2282.885	482.00	4.71	.35	2283.23	.00	1.99	32.17	6.000	30.000	.33	0 .0
7.615	.0167					.0017	.01	3.29	.47	1.60	.025	.00	.33	TRAP

Green Park Holdings, LLC
Culvert from I-15 South to Main South Box, 482cfs
File: gpsb588 By Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or l.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2546.583	2279.723	3.141	2282.864	482.00	4.94	.38	2283.24	.00	1.99	32.07	6.000	30.000	.33	0 .0
7.083	.0167					.0020	.01	3.14	.50	1.60	.025	.00	.33	TRAP
2553.665	2279.841	2.999	2282.840	482.00	5.19	.42	2283.26	.00	1.99	31.98	6.000	30.000	.33	0 .0
6.544	.0167					.0023	.02	3.00	.54	1.60	.025	.00	.33	TRAP
2560.209	2279.950	2.864	2282.814	482.00	5.44	.46	2283.27	.00	1.99	31.89	6.000	30.000	.33	0 .0
.611	.0167					.0025	.00	2.86	.57	1.60	.025	.00	.33	TRAP
2560.820	2279.960	2.852	2282.812	482.00	5.46	.46	2283.28	.00	1.99	31.88	6.000	30.000	.33	0 .0

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T1 Green Park Holdings, LLC                                                0
T2 Parallel System to Main Culvert
T3 File: gpsb2543  By: Alex Kingston
SO   1000.0002250.200  1                          2254.490
     1000.1002250.200  1      .028                                .000
     1050.3402250.400  1      .028                                .000
     1050.3402250.400  2
R    1237.8902251.150  2      .013                                .000    .000 0
R    1290.8302251.360  2      .013                             -32.268    .000 0
TS   1348.9302251.600  3      .013                             -38.708
R    2939.3702257.960  3      .013                                .000    .000 0
TS   2939.3802257.970  4      .013                                .000    .000 0
R    3007.0002260.575  4      .013                              25.000
SH   3007.0002260.575  4                          2266.050
CD   2  3   2    .500   5.000   31.000  .000  .000   .00
CD   4  2   0    .000  14.000   20.000  .000  .000   .00
CD   1  5   0    .000              .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD   3  6   0    .000              .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD   5  5   0    .000              .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD   6  5   0    .000              .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
CD   7  4   0    .000   3.000      .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
PTS  1 4    .000  5.000 10.000   .000 90.000   .000100.000  5.000
PTS  329    .000   .000 24.000   .000 23.750  1.900 23.500  2.660 23.000  3.700
PTS       22.000  5.030 21.000  5.920 20.000  6.530 19.000  6.950 18.000  7.240
PTS       17.000  7.470 16.000  7.660 15.000  7.810 14.000  7.920 13.000  7.980
PTS       12.000  8.000 11.000  7.980 10.000  7.920  9.000  7.810  8.000  7.660
PTS        7.000  7.470  6.000  7.240  5.000  6.950  4.000  6.530  3.000  5.920
PTS        2.000  5.030  1.000  3.700   .500  2.660   .250  1.900
PTS  5 5    .000  7.500   .100   .000 20.000   .000 35.000  7.500 40.000  7.600
PTS  6 5    .000  7.500   .100   .000 15.000   .000 35.000   .000 50.000  7.500
Q           2543.000   .0
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FILE: gpsb2543.WSW W S P G W - CIVILDESIGN Version 14.05 PAGE 1
Program Package Serial Number: 1439
WATER SURFACE PROFILE LISTING Date: 3-25-2002 Time: 3:59: 0

Green Park Holdings, LLC
Parallel System to Main Culvert
File: gpsb2543 By: Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE	Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	2250.200	2.063	2252.263	2543.00	14.65	3.33	2255.60	.00	3.07	88.25		1		0 .0
.100	.0000					.0314	.00	2.06	1.84	.000	.028			IR-OPEN
1000.100	2250.200	2.062	2252.262	2543.00	14.66	3.34	2255.60	.00	3.07	88.25		1		0 .0
7.294	.0040					.0338	.25	2.06	1.84	3.806	.028			IR-OPEN
1007.394	2250.229	1.979	2252.208	2543.00	15.30	3.64	2255.84	.00	3.07	87.92		1		0 .0
7.857	.0040					.0391	.31	1.98	1.96	3.806	.028			IR-OPEN
1015.251	2250.260	1.891	2252.151	2543.00	16.05	4.00	2256.15	.00	3.07	87.56		1		0 .0
7.583	.0040					.0455	.35	1.89	2.10	3.806	.028			IR-OPEN
1022.834	2250.290	1.806	2252.096	2543.00	16.83	4.40	2256.50	.00	3.07	87.22		1		0 .0
7.335	.0040					.0531	.39	1.81	2.25	3.806	.028			IR-OPEN
1030.169	2250.320	1.726	2252.046	2543.00	17.65	4.84	2256.89	.00	3.07	86.90		1		0 .0
7.014	.0040					.0619	.43	1.73	2.42	3.806	.028			IR-OPEN
1037.182	2250.347	1.648	2251.996	2543.00	18.52	5.32	2257.32	.00	3.07	86.59		1		0 .0
6.725	.0040					.0721	.49	1.65	2.59	3.806	.028			IR-OPEN
1043.908	2250.374	1.574	2251.948	2543.00	19.42	5.86	2257.80	.00	3.07	86.30		1		0 .0
6.432	.0040					.0841	.54	1.57	2.78	3.806	.028			IR-OPEN
1050.340	2250.400	1.504	2251.904	2543.00	20.37	6.44	2258.35	.00	3.07	86.02		1		0 .0
WALL EXIT														

Green Park Holdings, LLC
Parallel System to Main Culvert
File: gpsb2543 By: Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1050.340	2250.400	4.827	2255.227	2543.00	17.56	4.79	2260.02	.00	5.00	31.00	5.000	31.000	.00	2 .5
54.802	.0040					.0075	.41	4.83	1.43	5.00	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1105.142	2250.619	4.653	2255.272	2543.00	18.22	5.15	2260.43	.00	5.00	31.00	5.000	31.000	.00	2 .5
67.896	.0040					.0084	.57	4.65	1.51	5.00	.013	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
1173.038	2250.891	4.436	2255.327	2543.00	19.11	5.67	2261.00	.00	5.00	31.00	5.000	31.000	.00	2 .5
64.852	.0040					.0096	.62	4.44	1.63	5.00	.013	.00	.00	BOX
1237.890	2251.150	4.230	2255.380	2543.00	20.04	6.24	2261.62	5.00	5.00	31.00	5.000	31.000	.00	2 .5
52.940	.0040					.0108	.57	5.00	1.75	5.00	.013	.00	.00	BOX
1290.830	2251.360	4.061	2255.421	2543.00	20.87	6.77	2262.19	5.00	5.00	31.00	5.000	31.000	.00	2 .5
TRANS STR	.0041					.0079	.46	5.00	1.86		.013	.00	.00	BOX
1348.930	2251.600	6.732	2258.332	2543.00	17.59	4.81	2263.14	.00	6.73	15.04		3		0 .0
257.777	.0040					.0042	1.08	6.73	1.00	7.300	.013			IR-COV
1606.707	2252.631	7.250	2259.881	2543.00	16.77	4.37	2264.25	.00	6.73	11.91		3		0 .0
86.610	.0040					.0042	.36	7.25	.83	7.300	.013			IR-COV

Green Park Holdings, LLC
Parallel System to Main Culvert
File: gpsb2543 By: Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1693.318	2252.977	7.300	2260.277	2543.00	16.71	4.34	2264.61	.00	6.73	11.48		3	0	.0
327.406	.0040					.0042	1.37	7.30	.81	7.300	.013			IR-COV
2020.724	2254.287	7.300	2261.587	2543.00	16.71	4.34	2265.92	.00	6.73	11.48		3	0	.0
HYDRAULIC JUMP														
2020.724	2254.287	6.171	2260.458	2543.00	18.77	5.47	2265.93	.00	6.73	17.18		3	0	.0
131.320	.0040					.0054	.70	6.17	1.18	7.300	.013			IR-COV
2152.044	2254.812	5.838	2260.650	2543.00	19.63	5.98	2266.63	.00	6.73	18.18		3	0	.0
135.451	.0040					.0060	.81	5.84	1.30	7.300	.013			IR-COV
2287.495	2255.354	5.513	2260.867	2543.00	20.58	6.58	2267.45	.00	6.73	18.91		3	0	.0
127.841	.0040					.0068	.87	5.51	1.42	7.300	.013			IR-COV
2415.335	2255.865	5.215	2261.080	2543.00	21.59	7.24	2268.32	.00	6.73	19.58		3	0	.0
119.632	.0040					.0077	.93	5.22	1.55	7.300	.013			IR-COV
2534.968	2256.343	4.939	2261.282	2543.00	22.64	7.96	2269.24	.00	6.73	20.14		3	0	.0
111.554	.0040					.0088	.99	4.94	1.69	7.300	.013			IR-COV
2646.522	2256.789	4.682	2261.471	2543.00	23.75	8.76	2270.23	.00	6.73	20.52		3	0	.0
103.963	.0040					.0101	1.05	4.68	1.83	7.300	.013			IR-COV
2750.485	2257.205	4.441	2261.646	2543.00	24.91	9.63	2271.28	.00	6.73	20.89		3	0	.0
97.347	.0040					.0116	1.13	4.44	1.99	7.300	.013			IR-COV

Green Park Holdings, LLC
Parallel System to Main Culvert
File: gpsb2543 By: Alex Kingston

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt ol I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2847.833	2257.594	4.215	2261.809	2543.00	26.12	10.60	2272.41	.00	6.73	21.23		3	0	.0
91.538	.0040					.0133	1.21	4.22	2.15	7.300	.013			IR-COV
2939.370	2257.960	4.004	2261.964	2543.00	27.40	11.66	2273.62	.00	6.73	21.54		3	0	.0
TRANS STR	1.0250					.0128	.00	4.00	2.33		.013			IR-COV
2939.380	2257.970	4.769	2262.739	2543.00	26.66	11.04	2273.78	2.85	7.95	20.00	14.000	20.000	.00	0 .0
25.086	.0385					.0107	.27	7.62	2.15	3.16	.013	.00	.00	RECTANG
2964.466	2258.936	4.977	2263.914	2543.00	25.55	10.13	2274.05	2.62	7.95	20.00	14.000	20.000	.00	0 .0
23.309	.0385					.0094	.22	7.59	2.02	3.16	.013	.00	.00	RECTANG
2987.774	2259.834	5.220	2265.054	2543.00	24.36	9.21	2274.27	2.38	7.95	20.00	14.000	20.000	.00	0 .0
19.226	.0385					.0082	.16	7.60	1.88	3.16	.013	.00	.00	RECTANG
3007.000	2260.575	5.475	2266.050	2543.00	23.22	8.37	2274.42	2.16	7.95	20.00	14.000	20.000	.00	0 .0

```
T1 Green Park Holdings                                                    0
T2 Flow From I-15 to Las Vegas BLVD
T3 gpsbalt3
SO    945.1602248.900  1                          2254.490
     1000.0002249.200  1      .028                                  .000
     1040.3402249.360  1      .028                                  .000
     1050.3402249.400  1  4   .028   10.000          2249.400          .0          .000
WX   1050.3402249.400  5
R    1237.8902250.150  5      .013                                  .000    .000 0
TS   1316.5402250.450  6      .013                                -47.074
R    1400.0002250.800  6      .013                                  .000    .000 0
R    2200.0002254.000  6      .013                                  .000    .000 0
R    2600.0002255.600  6      .013                                  .000    .000 0
R    2938.2902256.950  6      .013                                  .000    .000 0
R    3093.3902257.570  6      .013                                 88.866   .000 0
R    3545.4702259.380  6      .013                                  .000    .000 0
R    3729.7002260.120  6      .013                                -88.866   .000 0
R    3880.2502260.720  6      .013                                  .000    .000 0
R    4029.5902261.320  6      .013                                 85.566   .000 0
R    4200.0002262.000  6      .013                                  .000    .000 0
R    4600.0002263.600  6      .013                                  .000    .000 0
R    4835.6902264.500  6      .013                                  .000    .000 0
R    4862.0002264.200  6      .013                                  .000    .000 0
JX   4872.0002265.450  6  9   .013  482.000          2264.68          12.0        10.000
R    4887.3802268.800  6      .013                                 6.287    .000 0
R    5092.0002270.840  6      .013                                23.674    .000 0
R    5168.7902272.750  6      .013                                  .000    .000 0
TS   5327.9602276.770  7      .013                                -60.798
R    5361.7202277.620  7      .013                                -12.895   .000 0
R    5497.9802281.100  7      .013                                  .000    .000 0
R    5773.0002282.700  7      .013                                  .000    .000 0
WE   5773.0002282.700  8      .500
R    5803.0302283.190  8      .013                                  .000
SH   5803.0302283.190  8                          2283.190
CD   2  3   0    .000   7.000   10.000  .000  .000   .00
CD   3  3   2    .500   5.000   22.000  .000  .000   .00
CD   4  3   2    .500   5.000   22.000  .000  .000   .00
CD   5  3   2    .500   5.000   22.000  .000  .000   .00
CD   7  3   2    .500   4.000   37.000  .000  .000   .00
CD   8  1   0    .000   4.000   60.000  .330  .330   .00
CD   1  5   0    .000             .00    .00   .00    .00   .00   .00   .00   .00   .00   .00
CD   6  6   0    .000             .00    .00   .00    .00   .00   .00   .00   .00   .00   .00
CD   9  6   0    .000             .00    .00   .00    .00   .00   .00   .00   .00   .00   .00
PTS  1 4   .000  5.000 10.000   .000 90.000   .000100.000  5.000
PTS  621   .000   .000 16.000   .000 16.000  1.000 15.640  3.000 15.410  3.540
PTS      15.160  4.000 14.770  4.550 14.380  5.000 13.090  6.000 12.000  6.480
PTS      11.000  6.720  8.000  7.000  5.000  6.720  4.000  6.480  2.910  6.000
PTS       1.620  5.000  1.230  4.550   .840  4.000   .590  3.540   .360  3.000
          .000  1.000
     921   .000   .000 10.000   .000 10.000  4.000  9.820  4.530  9.490  5.000
PTS       9.000  5.390  8.500  5.590  8.000  5.730  7.520  5.830  7.000  5.930
PTS       6.000  6.050  5.000  6.090  4.000  6.050  3.000  5.930  2.480  5.830
PTS       2.000  5.730  1.500  5.590  1.000  5.390   .510  5.000   .180  4.530
PTS        .000  4.000
Q         1326.000   .0
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FILE: gpsbalt3.WSW W S P G W - CIVILDESIGN Version 14.05 PAGE 1
Program Package Serial Number: 1439
WATER SURFACE PROFILE LISTING Date: 3-26-2002 Time: 4:27:14

Green Park Holdings
Flow From 1-15 to Las Vegas BLVD
gpsbalt3

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
945.160	2248.900	5.590	2254.490	1818.00	3.57	.20	2254.69	.00	2.47	100.00		1		0 .0
44.460	.0055					.0006	.03	5.59	.28	2.840	.028			IR-OPEN
989.620	2249.143	5.353	2254.496	1818.00	3.75	.22	2254.71	.00	2.47	100.00		1		0 .0
10.380	.0055					.0006	.01	5.35	.30	2.840	.028			IR-OPEN
1000.000	2249.200	5.298	2254.498	1818.00	3.79	.22	2254.72	.00	2.47	100.00		1		0 .0
40.340	.0040					.0007	.03	5.30	.30	3.124	.028			IR-OPEN
1040.340	2249.360	5.152	2254.512	1818.00	3.91	.24	2254.75	.00	2.47	100.00		1		0 .0
JUNCT STR	.0040					.0007	.01	5.15	.32		.028			IR-OPEN
		---------- WARNING - Junction Analysis - Irregular Channel----------												
1050.340	2249.400	5.121	2254.521	1808.00	3.91	.24	2254.76	.00	2.46	100.00		1		0 .0
HYDRAULIC JUMP														
1050.340	2249.400	4.727	2254.127	1808.00	18.21	5.15	2259.28	.00	5.00	22.00	5.000	22.000	.00	2 .5
HYDRAULIC DROP														
		---------- WARNING - Flow depth near top of box conduit ----------												
1050.340	2249.400	5.121	2254.521	1808.00	17.22	4.60	2259.12	.00	5.00	22.00	5.000	22.000	.00	2 .5
187.550	.0040					.0137	2.57	5.12	1.39	5.00	.013	.00	.00	BOX

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1237.890	2250.150	6.945	2257.094	1808.00	17.22	4.60	2261.70	.00	5.00	22.00	5.000	22.000	.00	2 .5
TRANS STR	.0038							.00	1.39		.013	.00	.00	BOX
1316.540	2250.450	6.523	2256.973	1808.00	19.68	6.02	2262.99	.00	6.52	7.64			6	0 .0
.114	.0042					.0075	.00	6.52	1.00	6.500	.013			IR-COV
1316.654	2250.450	6.500	2256.950	1808.00	19.72	6.04	2262.99	.00	6.52	7.83			6	0 .0
83.346	.0042					.0075	.62	6.50	1.02	6.500	.013			IR-COV
1400.000	2250.800	6.500	2257.300	1808.00	19.72	6.04	2263.34	.00	6.52	7.83			6	0 .0
1400.000	2250.800	6.523	2257.323	1808.00	19.68	6.02	2263.34	.00	6.52	7.64			6	0 .0
.108	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
1400.108	2250.801	6.500	2257.301	1808.00	19.72	6.04	2263.34	.00	6.52	7.83			6	0 .0
799.892	.0040					.0075	5.99	6.50	1.02	6.500	.013			IR-COV
2200.000	2254.000	6.500	2260.500	1808.00	19.72	6.04	2266.54	.00	6.52	7.83			6	0 .0
2200.000	2254.000	6.523	2260.523	1808.00	19.68	6.02	2266.54	.00	6.52	7.64			6	0 .0
.108	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
2200.108	2254.000	6.500	2260.500	1808.00	19.72	6.04	2266.54	.00	6.52	7.83			6	0 .0
399.892	.0040					.0075	2.99	6.50	1.02	6.500	.013			IR-COV
2600.000	2255.600	6.500	2262.100	1808.00	19.72	6.04	2268.14	.00	6.52	7.83			6	0 .0
600.000	2255.600	6.523	2262.123	1808.00	19.68	6.02	2268.14	.00	6.52	7.64			6	0 .0
.107	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
2600.107	2255.601	6.500	2262.101	1808.00	19.72	6.04	2268.14	.00	6.52	7.83			6	0 .0
338.183	.0040					.0075	2.53	6.50	1.02	6.500	.013			IR-COV

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT or "N"	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp		X-Fall	ZR	Type Ch
2938.290	2256.950	6.500	2263.450	1808.00	19.72	6.04	2269.49	.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
2938.290	2256.950	6.523	2263.473	1808.00	19.68	6.02	2269.49	7.00	6.52	7.64		6	0	.0
154.992	.0040					.0075	1.16	7.00	1.02	6.500	.013			IR-COV
2938.398	2256.950	6.500	2263.450	1808.00	19.72	6.04	2269.49	7.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
3093.390	2257.570	6.500	2264.070	1808.00	19.72	6.04	2270.11	7.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
3093.390	2257.570	6.523	2264.093	1808.00	19.68	6.02	2270.11	.00	6.52	7.64		6	0	.0
451.972	.0040					.0075	3.38	6.50	1.02	6.500	.013			IR-COV
3093.498	2257.571	6.500	2264.071	1808.00	19.72	6.04	2270.11	.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
3545.470	2259.380	6.500	2265.880	1808.00	19.72	6.04	2271.92	.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
3545.470	2259.380	6.523	2265.903	1808.00	19.68	6.02	2271.92	7.00	6.52	7.64		6	0	.0
184.122	.0040					.0075	1.38	7.00	1.02	6.500	.013			IR-COV
3545.578	2259.380	6.500	2265.880	1808.00	19.72	6.04	2271.92	7.00	6.52	7.83		6	0	.0
.107	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
3729.700	2260.120	6.500	2266.620	1808.00	19.72	6.04	2272.66	7.00	6.52	7.83		6	0	.0
.107	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
3729.700	2260.120	6.523	2266.643	1808.00	19.68	6.02	2272.66	.00	6.52	7.64		6	0	.0
150.443	.0040					.0075	1.13	6.50	1.02	6.500	.013			IR-COV
3729.807	2260.121	6.500	2266.621	1808.00	19.72	6.04	2272.66	.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
3880.250	2260.720	6.500	2267.220	1808.00	19.72	6.04	2273.26	.00	6.52	7.83		6	0	.0
.108	.0040					.0075	.00	7.00	1.00	6.500	.013			IR-COV
3880.250	2260.720	6.523	2267.243	1808.00	19.68	6.02	2273.26	7.00	6.52	7.64		6	0	.0

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3880.358	2260.720	6.500	2267.220	1808.00	19.72	6.04	2273.26	7.00	6.52	7.83			6	0 .0
149.232	.0040					.0075	1.12	7.00	1.02	6.500	.013			IR-COV
4029.590	2261.320	6.500	2267.820	1808.00	19.72	6.04	2273.86	7.00	6.52	7.83			6	0 .0
4029.590	2261.320	6.523	2267.843	1808.00	19.68	6.02	2273.86	.00	6.52	7.64			6	0 .0
.107	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
4029.698	2261.321	6.500	2267.821	1808.00	19.72	6.04	2273.86	.00	6.52	7.83			6	0 .0
170.302	.0040					.0075	1.27	6.50	1.02	6.500	.013			IR-COV
4200.000	2262.000	6.500	2268.500	1808.00	19.72	6.04	2274.54	.00	6.52	7.83			6	0 .0
4200.000	2262.000	6.523	2268.523	1808.00	19.68	6.02	2274.54	.00	6.52	7.64			6	0 .0
.108	.0040					.0075	.00	6.52	1.00	6.500	.013			IR-COV
4200.108	2262.000	6.500	2268.500	1808.00	19.72	6.04	2274.54	.00	6.52	7.83			6	0 .0
399.892	.0040					.0075	2.99	6.50	1.02	6.500	.013			IR-COV
4600.000	2263.600	6.500	2270.100	1808.00	19.72	6.04	2276.14	.00	6.52	7.83			6	0 .0
4600.000	2263.600	6.523	2270.123	1808.00	19.68	6.02	2276.14	.00	6.52	7.64			6	0 .0
.103	.0038					.0075	.00	6.52	1.00	6.500	.013			IR-COV
4600.103	2263.601	6.500	2270.101	1808.00	19.72	6.04	2276.14	.00	6.52	7.83			6	0 .0
235.587	.0038					.0075	1.76	6.50	1.02	6.500	.013			IR-COV
4835.690	2264.500	6.500	2271.000	1808.00	19.72	6.04	2277.04	.00	6.52	7.83			6	0 .0
4835.690	2264.500	6.523	2271.023	1808.00	19.68	6.02	2277.04	.00	6.52	7.64			6	0 .0
4.145	-.0114					.0083	.03	6.52	1.00	.000	.013			IR-COV
4839.834	2264.453	6.849	2271.302	1808.00	19.28	5.77	2277.07	.00	6.52	3.23			6	0 .0
5.988	-.0114					.0092	.06	6.85	.63	.000	.013			IR-COV

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
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Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/Dia.-FT or I.D.	Base Wt ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall ZR	Type Ch
4845.823	2264.385	7.000	2271.385	1808.00	19.23	5.74	2277.12	.00	6.52	.00		6	0 .0
16.177	-.0114					.0092	.15	7.00	.00	.000	.013		IR-COV
4862.000	2264.200	7.334	2271.534	1808.00	19.23	5.74	2277.27	.00	6.52	.00		6	0 .0
JUNCT STR	.1250					.0050	.05	.00	.00		.013		IR-COV
			WARNING - Junction Analysis - Irregular Channel										
4872.000	2265.450	10.136	2275.586	1326.00	14.10	3.09	2278.67	.00	5.72	.00		6	0 .0
8.446	.2178					.0050	.04	.00	.00	1.391	.013		IR-COV
4880.446	2267.290	8.425	2275.715	1326.00	14.10	3.09	2278.80	.00	5.72	.00		6	0 .0
HYDRAULIC JUMP													
4880.446	2267.290	3.546	2270.836	1326.00	23.89	8.86	2279.70	2.44	5.72	14.81		6	0 .0
1.792	.2178					.0132	.02	5.98	2.18	1.391	.013		IR-COV
4882.238	2267.680	3.650	2271.330	1326.00	23.25	8.39	2279.72	2.29	5.72	14.70		6	0 .0
2.777	.2178					.0119	.03	5.94	2.08	1.391	.013		IR-COV
4885.015	2268.285	3.841	2272.126	1326.00	22.17	7.63	2279.76	2.05	5.72	14.49		6	0 .0
2.365	.2178					.0104	.02	5.89	1.92	1.391	.013		IR-COV
4887.380	2268.800	4.044	2272.844	1326.00	21.13	6.94	2279.78	.52	5.72	14.26		6	0 .0
204.620	.0100					.0096	1.96	4.56	1.78	4.001	.013		IR-COV

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Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5092.000	2270.840	4.080	2274.920	1326.00	20.97	6.83	2281.75	.00	5.72	14.21		6	0	.0
24.878	.0249					.0089	.22	4.08	1.75	2.865	.013			IR-COV
5116.878	2271.459	4.297	2275.756	1326.00	20.00	6.21	2281.97	.00	5.72	13.90		6	0	.0
19.283	.0249					.0078	.15	4.30	1.61	2.865	.013			IR-COV
5136.161	2271.938	4.533	2276.472	1326.00	19.07	5.64	2282.12	.00	5.72	13.56		6	0	.0
14.425	.0249					.0069	.10	4.53	1.48	2.865	.013			IR-COV
5150.585	2272.297	4.787	2277.084	1326.00	18.18	5.13	2282.22	.00	5.72	13.13		6	0	.0
10.100	.0249					.0061	.06	4.79	1.36	2.865	.013			IR-COV
5160.686	2272.549	5.064	2277.613	1326.00	17.33	4.66	2282.28	.00	5.72	12.59		6	0	.0
6.078	.0249					.0054	.03	5.06	1.24	2.865	.013			IR-COV
5166.763	2272.700	5.370	2278.070	1326.00	16.53	4.24	2282.31	.00	5.72	11.81		6	0	.0
2.027	.0249					.0049	.01	5.37	1.12	2.865	.013			IR-COV
5168.790	2272.750	5.716	2278.466	1326.00	15.75	3.85	2282.32	.73	5.72	10.91		6	0	.0
TRANS STR	.0253							6.445	1.000		.013			IR-COV
5327.960	2276.770	1.908	2278.678	1326.00	19.30	5.79	2284.46	4.00	3.48	37.00	4.000	37.000	.00	2 .5
33.760	.0252					.0166	.56	4.00	2.50	1.69	.013	.00	.00	BOX
5361.720	2277.620	1.968	2279.588	1326.00	18.72	5.44	2285.03	.00	3.48	37.00	4.000	37.000	.00	2 .5
19.164	.0255					.0154	.29	1.97	2.38	1.68	.013	.00	.00	BOX

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5380.884	2278.109	2.013	2280.122	1326.00	18.30	5.20	2285.32	.00	3.48	37.00	4.000	37.000	.00	2 .5
32.040	.0255					.0138	.44	2.01	2.30	1.68	.013	.00	.00	BOX
5412.924	2278.928	2.111	2281.039	1326.00	17.45	4.73	2285.77	.00	3.48	37.00	4.000	37.000	.00	2 .5
24.157	.0255					.0120	.29	2.11	2.15	1.68	.013	.00	.00	BOX
5437.081	2279.545	2.214	2281.759	1326.00	16.64	4.30	2286.06	.00	3.48	37.00	4.000	37.000	.00	2 .5
18.702	.0255					.0104	.19	2.21	2.00	1.68	.013	.00	.00	BOX
5455.782	2280.022	2.322	2282.344	1326.00	15.86	3.91	2286.25	.00	3.48	37.00	4.000	37.000	.00	2 .5
14.671	.0255					.0091	.13	2.32	1.86	1.68	.013	.00	.00	BOX
5470.453	2280.397	2.435	2282.832	1326.00	15.12	3.55	2286.38	.00	3.48	37.00	4.000	37.000	.00	2 .5
11.546	.0255					.0079	.09	2.44	1.73	1.68	.013	.00	.00	BOX
5481.999	2280.692	2.554	2283.246	1326.00	14.42	3.23	2286.48	.00	3.48	37.00	4.000	37.000	.00	2 .5
9.032	.0255					.0068	.06	2.55	1.61	1.68	.013	.00	.00	BOX
5491.031	2280.923	2.679	2283.601	1326.00	13.75	2.94	2286.54	.00	3.48	37.00	4.000	37.000	.00	2 .5
6.949	.0255					.0059	.04	2.68	1.50	1.68	.013	.00	.00	BOX
5497.980	2281.100	2.810	2283.910	1326.00	13.11	2.67	2286.58	.00	3.48	37.00	4.000	37.000	.00	2 .5
119.408	.0058					.0054	.64	2.81	1.40	2.76	.013	.00	.00	BOX
5617.388	2281.795	2.875	2284.670	1326.00	12.81	2.55	2287.22	.00	3.48	37.00	4.000	37.000	.00	2 .5
93.849	.0058					.0048	.45	2.88	1.35	2.76	.013	.00	.00	BOX

Green Park Holdings
Flow From I-15 to Las Vegas BLVD
gpsbalt3

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	ZR	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall			Type Ch
5711.237	2282.341	3.016	2285.356	1326.00	12.21	2.32	2287.67	.00	3.48	37.00	4.000	37.000	.00	2	.5
39.737	.0058					.0042	.17	3.02	1.26	2.76	.013	.00	.00	BOX	
5750.974	2282.572	3.163	2285.735	1326.00	11.65	2.11	2287.84	.00	3.48	37.00	4.000	37.000	.00	2	.5
17.362	.0058					.0037	.06	3.16	1.17	2.76	.013	.00	.00	BOX	
5768.336	2282.673	3.317	2285.990	1326.00	11.10	1.91	2287.90	.00	3.48	37.00	4.000	37.000	.00	2	.5
4.664	.0058					.0032	.01	3.32	1.09	2.76	.013	.00	.00	BOX	
5773.000	2282.700	3.480	2286.180	1326.00	10.58	1.74	2287.92	.00	3.48	37.00	4.000	37.000	.00	2	.5
WALL	ENTRANCE														
5773.000	2282.700	6.168	2288.868	1326.00	3.47	.19	2289.05	.00	2.46	64.07	4.000	60.000	.33	0	.0
16.021	.0163					.0001	.00	6.17	.25	1.30	.013	.00	.33	TRAP	
5789.021	2282.961	5.890	2288.851	1326.00	3.63	.21	2289.06	.00	2.46	63.89	4.000	60.000	.33	0	.0
14.008	.0163					.0001	.00	5.89	.27	1.30	.013	.00	.33	TRAP	
5803.030	2283.190	5.644	2288.834	1326.00	3.80	.22	2289.06	.00	2.46	63.73	4.000	60.000	.33	0	.0

SOUTH BOX OUTLET HEC-RAS MODEL

HEC-RAS Plan: Plan 01 River: Outlet Reach: 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	242	2973.00	50.40	54.93	54.89	57.14	0.001786	11.94	248.96	55.00	0.99
1	241.5	2973.00	50.00	54.93	54.86	56.83	0.005517	11.42	303.58	99.25	0.91
1	241	2973.00	50.37	53.64	53.56	54.14	0.010973	6.99	584.26	423.00	0.73
1	240	2973.00	50.37	52.70		53.11	0.013695	6.78	607.87	507.28	0.78
1	239	6470.00	44.37	48.62		48.77	0.008506	6.06	2276.58	1214.19	0.69
1	238	6470.00	42.37	44.87	44.31	45.19	0.007540	5.94	1559.52	1048.73	0.66

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X       X
X     X  X        X    X       X   X    X    X       X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Southbox Outlet
Project File : sbox.prj
Run Date and Time: 3/25/2002 1:37:42 PM

Project in English units

PLAN DATA

Plan Title: Plan 01
Plan File : C:\HEC\RAS\sbox.p01

Geometry Title: Geom 01
Geometry File : C:\HEC\RAS\sbox.g01

Flow Title : Flow 01
Flow File : C:\HEC\RAS\sbox.f01

Plan Summary Information:
Number of: Cross Sections = 17 Mulitple Openings = 0
Culverts = 0 Inline Weirs = 0
Bridges = 0

putational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: Flow 01
Flow File : C:\HEC\RAS\sbox.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Outlet	1	242	2973
Outlet	1	239	6470

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Outlet	1	PF 1	Known WS = 55.2	Known WS = 44.87

GEOMETRY DATA

metry Title: Geom 01
metry File : C:\HEC\RAS\sbox.g01

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 242

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	55.4	1000	50.4	1055	50.4	1055	55.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.013	1000	.013	1055	.013

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1055	77	77	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	57.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.21	Wt. n-Val.		0.013	
W.S. Elev (ft)	54.93	Reach Len. (ft)	77.00	77.00	77.00
Crit W.S. (ft)	54.89	Flow Area (sq ft)		248.96	
E.G. Slope (ft/ft)	0.001786	Area (sq ft)		248.96	
Q Total (cfs)	2973.00	Flow (cfs)		2973.00	
Top Width (ft)	55.00	Top Width (ft)		55.00	
Vel Total (ft/s)	11.94	Avg. Vel. (ft/s)		11.94	
Max Chl Dpth (ft)	4.53	Hydr. Depth (ft)		4.53	
Conv. Total (cfs)	70346.8	Conv. (cfs)		70346.8	
Length Wtd. (ft)	77.00	Wetted Per. (ft)		64.05	
Min Ch El (ft)	50.40	Shear (lb/sq ft)		0.43	
Alpha	1.00	Stream Power (lb/ft s)		5.18	
Frctn Loss (ft)	0.22	Cum Volume (acre-ft)	19.62	6.10	7.21
C & E Loss (ft)	0.10	Cum SA (acres)	12.68	1.92	7.37

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 241.5

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1007	56	1020	50	1069	50	1076	54	1111	55
1158	56	1238	57						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1007	.04	1020	.028	1069	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1020	1069	58.85	87.57	78.26	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	56.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.90	Wt. n-Val.	0.040	0.028	0.040
W.S. Elev (ft)	54.93	Reach Len. (ft)	58.85	87.57	78.26
Crit W.S. (ft)	54.86	Flow Area (sq ft)	26.33	241.59	35.66
E.G. Slope (ft/ft)	0.005517	Area (sq ft)	26.33	241.59	35.66
Q Total (cfs)	2973.00	Flow (cfs)	124.33	2758.49	90.18
Top Width (ft)	99.25	Top Width (ft)	10.68	49.00	39.56
Vel Total (ft/s)	9.79	Avg. Vel. (ft/s)	4.72	11.42	2.53
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)	2.47	4.93	0.90
Conv. Total (cfs)	40027.4	Conv. (cfs)	1673.9	37139.2	1214.2
Length Wtd. (ft)	85.47	Wetted Per. (ft)	11.77	49.00	40.64
Min Ch El (ft)	50.00	Shear (lb/sq ft)	0.77	1.70	0.30
Alpha	1.27	Stream Power (lb/ft s)	3.64	19.39	0.76
Frctn Loss (ft)	0.47	Cum Volume (acre-ft)	19.60	5.67	7.18
C & E Loss (ft)	0.18	Cum SA (acres)	12.67	1.82	7.33

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 241.375*

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
990.75	55.59	1015	50.33	1022.5	50.09	1024.22	50.09	1065.5	50.09
1070.5	50.47	1078.9	53.48	1120.89	54.31	1177.27	55.16	1273.25	56.08

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
990.75	.041	1015	.032	1070.5	.04	1273.25	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1015	1070.5	58.85	87.57	78.26	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 241.25*

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
974.5	55.18	1010	50.67	1025	50.18	1026.48	50.18	1062	50.18
1072	50.93	1081.8	52.96	1130.78	53.61	1196.55	54.31	1308.5	55.15

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
974.5	.043	1010	.036	1072	.04	1308.5	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1010	1072	58.85	87.57	78.26	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 241.125*

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
958.25	54.78	1005	51	1027.5	50.28	1028.74	50.28	1058.5	50.28
1073.5	51.4	1084.69	52.45	1140.66	52.92	1215.82	53.47	1343.75	54.23

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
958.25	.044	1005	.041	1073.5	.04	1343.75	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1005	1073.5	58.85	87.57	78.26	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 241

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
942	54.37	1000	51.33	1030	50.37	1031	50.37	1055	50.37
1075	51.87	1379	53.31						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
942	.045	1000	.045	1075	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1075	51.4	90.06	83.44	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	54.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.045	0.045	0.040
W.S. Elev (ft)	53.64	Reach Len. (ft)	51.40	90.06	83.44
Crit W.S. (ft)	53.56	Flow Area (sq ft)	50.73	215.55	317.98
E.G. Slope (ft/ft)	0.010973	Area (sq ft)	50.73	215.55	317.98
Q Total (cfs)	2973.00	Flow (cfs)	192.75	1506.16	1274.09
Top Width (ft)	423.00	Top Width (ft)	44.00	75.00	304.00
Vel Total (ft/s)	5.09	Avg. Vel. (ft/s)	3.80	6.99	4.01
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	1.15	2.87	1.05
Conv. Total (cfs)	28381.5	Conv. (cfs)	1840.1	14378.4	12163.0
Length Wtd. (ft)	82.49	Wetted Per. (ft)	44.06	75.07	304.33
Min Ch El (ft)	50.37	Shear (lb/sq ft)	0.79	1.97	0.72
Alpha	1.26	Stream Power (lb/ft s)	3.00	13.74	2.87
Frctn Loss (ft)	1.00	Cum Volume (acre-ft)	19.31	3.63	6.02
C & E Loss (ft)	0.03	Cum SA (acres)	12.51	1.32	6.08

Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 240

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
853	54.17	1000	50.37	1047	50.37	1334	52.37	1462	52.87

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
853	.045	1000	.045	1047	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1000	1047	101.5 87.25	84	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	53.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.045	0.045	0.040
W.S. Elev (ft)	52.70	Reach Len. (ft)	101.50	87.25	84.00
Crit W.S. (ft)		Flow Area (sq ft)	104.60	109.30	393.97
E.G. Slope (ft/ft)	0.013695	Area (sq ft)	104.60	109.30	393.97
Q Total (cfs)	2973.00	Flow (cfs)	446.84	741.33	1784.83
Top Width (ft)	507.28	Top Width (ft)	89.96	47.00	370.32
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	4.27	6.78	4.53
Max Chl Dpth (ft)	2.33	Hydr. Depth (ft)	1.16	2.33	1.06
Conv. Total (cfs)	25404.7	Conv. (cfs)	3818.3	6334.8	15251.6
Length Wtd. (ft)	88.80	Wetted Per. (ft)	89.99	47.00	370.33
Min Ch El (ft)	50.37	Shear (lb/sq ft)	0.99	1.99	0.91
Alpha	1.11	Stream Power (lb/ft s)	4.25	13.49	4.12
Frctn Loss (ft)	1.13	Cum Volume (acre-ft)	19.22	3.29	5.34
C & E Loss (ft)	0.02	Cum SA (acres)	12.43	1.20	5.43

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 239.75*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
860.22	53.22	900.44	51.94	920.19	51.81	1109.85	50.5	1118.03	50.45
1152.08	50.21	1162.97	50.14	1165.36	50.12	1275	50.37	1275.25	50.37
1279.75	49.37	1281	48.87	1316.25	48.87	1319	49.37	1581.62	51.53
1698.75	52.19								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
860.22	.054	1275	.044	1319	.041	1698.75	.041

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1275	1319	101.5 87.25	84	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 239.5*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
867.43	52.27	933.63	50.09	966.13	50	1278.24	49.13	1291.68	49.09
1347.72	48.93	1365.65	48.88	1369.57	48.87	1550	50.37	1550.5	50.37
1559.5	48.37	1562	47.37	1585.5	47.37	1591	48.37	1829.24	50.68
1935.5	51.52								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
867.43	.062	1550	.043	1591	.043	1935.5	.043

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1550	1591	101.5 87.25	84	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 239.25*

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
874.65	51.32	966.81	48.23	1012.06	48.18	1446.62	47.75	1465.34	47.73
1543.36	47.65	1568.32	47.63	1573.79	47.62	1825	50.37	1825.75	50.37
1839.25	47.37	1843	45.87	1854.75	45.87	1863	47.37	2076.87	49.84
2172.25	50.84								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
874.65	.071	1825	.041	1863	.044	2172.25	.044

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1825	1863	101.5 87.26	84	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 239

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
881.87	50.37	1000	46.37	1058	46.37	1615	46.37	1639	46.37
1739	46.37	1771	46.37	1778	46.37	2100	50.37	2101	50.37
2119	46.37	2124	44.37	2135	46.37	2409	50.17		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
881.87	.08	2100	.04	2135	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2100	2135	63.5	92.46	92.14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	48.77	Element			
Vel Head (ft)	0.15	Wt. n-Val.	0.080	0.040	0.045
W.S. Elev (ft)	48.62	Reach Len. (ft)	63.50	92.46	92.14
Crit W.S. (ft)		Flow Area (sq ft)	2030.42	63.43	182.74
E.G. Slope (ft/ft)	0.008506	Area (sq ft)	2030.42	63.43	182.74
Q Total (cfs)	6470.00	Flow (cfs)	5483.29	384.54	602.17
Top Width (ft)	1214.19	Top Width (ft)	1025.72	26.13	162.34
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)	2.70	6.06	3.30
Max Chl Dpth (ft)	4.25	Hydr. Depth (ft)	1.98	2.43	1.13
Conv. Total (cfs)	70152.6	Conv. (cfs)	59453.9	4169.5	6529.2
Length Wtd. (ft)	69.16	Wetted Per. (ft)	1025.78	26.94	162.35
Min Ch El (ft)	44.37	Shear (lb/sq ft)	1.05	1.25	0.60
Alpha	1.16	Stream Power (lb/ft s)	2.84	7.58	1.97
Frctn Loss (ft)	0.58	Cum Volume (acre-ft)	12.36	2.52	3.46
C & E Loss (ft)	0.01	Cum SA (acres)	7.05	0.89	3.66

Warning: Divided flow computed for this cross-section.

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 238.833*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
901.56	49.7	988.23	46.68	1008.87	46.03	1061.56	46.01	1183.75	45.95
1567.57	45.74	1589.37	45.73	1643.33	45.7	1680.22	45.7	1709.29	45.7
1715.65	45.7	2008.17	49.04	2009	49.04	2024	45.7	2028.17	44.04
2038.33	44.04	2040	44.04	2046.33	44.04	2055.5	45.7	2167.21	47.07
2[illegible]0.37	49.38								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
901.56	.074	2008.17	.04	2055.5	.045	2410.37	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
2008.17	2055.5	63.5	92.46	92.14	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 238.666*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
921.25	49.04	999.19	46.22	1017.75	45.69	1065.13	45.64	1175	45.54
1520.14	45.12	1539.74	45.1	1588.26	45.04	1621.43	45.04	1647.57	45.04
1653.29	45.04	1916.33	47.7	1917	47.7	1929	45.04	1932.33	43.7
1952.67	43.7	1956	43.7	1968.67	43.7	1976	45.04	2113.17	46.57
2411.74	48.58								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
921.25	.068	1916.33	.04	1976	.045	2411.74	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1916.33	1976	63.5	92.46	92.14	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 238.5*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.93	48.37	1010.14	45.75	1026.62	45.34	1068.69	45.28	1166.25	45.12
1472.71	44.49	1490.12	44.46	1533.2	44.37	1562.65	44.37	1585.86	44.37
1590.94	44.37	1824.5	46.37	1825	46.37	1834	44.37	1836.5	43.37
1867	43.37	1872	43.37	1891	43.37	1896.5	44.37	2059.13	46.07
2[illegible]3.11	47.78								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
940.93	.062	1824.5	.04	1896.5	.045	2413.11	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1824.5	1896.5	63.5	92.46	92.14	.1	.3

[redacted]SS SECTION RIVER: Outlet
[redacted]ACH: 1 RS: 238.333*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
960.62	47.7	1021.09	45.29	1035.49	45	1072.25	44.91	1157.5	44.7
1425.28	43.87	1440.49	43.82	1478.13	43.7	1503.87	43.7	1524.15	43.7
1528.59	43.7	1732.67	45.04	1733	45.04	1739	43.7	1740.67	43.04
1781.33	43.04	1788	43.04	1813.33	43.04	1817	43.7	2005.08	45.58
2414.48	46.99								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
960.62	.057	1732.67	.04	1817	.045	2414.48	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1732.67	1817	63.5	92.46	92.14	.1	.3

CROSS SECTION RIVER: Outlet
REACH: 1 RS: 238.166*

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
980.31	47.04	1032.05	44.83	1044.37	44.66	1075.82	44.55	1148.75	44.29
1377.85	43.24	1390.86	43.18	1423.07	43.04	1445.08	43.04	1462.44	43.04
1466.23	43.04	1640.83	43.7	1641	43.7	1644	43.04	1644.83	42.7
1695.67	42.7	1704	42.7	1735.67	42.7	1737.5	43.04	1951.04	45.08
2415.85	46.19								

Manning's n Values num= 4

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
980.31	.051	1640.83	.04	1737.5	.045	2415.85	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1640.83	1737.5	63.5	92.46	92.14	.1	.3

[redacted]S SECTION RIVER: Outlet
[redacted]CH: 1 RS: 238

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
1000	46.37	1043	44.37	1140	43.87	1368	42.37	1549	42.37
1610	42.37	1620	42.37	1658	42.37	1897	44.58	2417.22	45.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
1000	.045	1549	.04	1658	.045

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
1549	1658	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	45.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.32	Wt. n-Val.	0.045	0.040	0.045
W.S. Elev (ft)	44.87	Reach Len. (ft)			
Crit W.S. (ft)	44.31	Flow Area (sq ft)	926.94	272.50	360.08
E.G. Slope (ft/ft)	0.007540	Area (sq ft)	926.94	272.50	360.08
Q Total (cfs)	6470.00	Flow (cfs)	3923.56	1619.09	927.35
Top Width (ft)	1048.73	Top Width (ft)	516.75	109.00	422.98
Vel Total (ft/s)	4.15	Avg. Vel. (ft/s)	4.23	5.94	2.58
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)	1.79	2.50	0.85
Conv. Total (cfs)	74512.1	Conv. (cfs)	45185.9	18646.4	10679.8
Length Wtd. (ft)		Wetted Per. (ft)	516.77	109.00	422.99
Min Ch El (ft)	42.37	Shear (lb/sq ft)	0.84	1.18	0.40
Alpha	1.20	Stream Power (lb/ft s)	3.57	6.99	1.03
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

[redacted]:Outlet

Reach	River Sta.	n1	n2	n3	n4
1	242	.013	.013	.013	

1	241.5	.04	.028	.04	
1	241.375*	.041	.032	.04	.04
1	241.25*	.043	.036	.04	.04
1	241.125*	.044	.041	.04	.04
1	241	.045	.045	.04	
1	240	.045	.045	.04	
1	239.75*	.054	.044	.041	.041
1	239.5*	.062	.043	.043	.043
1	239.25*	.071	.041	.044	.044
1	239	.08	.04	.045	
1	238.833*	.074	.04	.045	.045
1	238.666*	.068	.04	.045	.045
1	238.5*	.062	.04	.045	.045
1	238.333*	.057	.04	.045	.045
1	238.166*	.051	.04	.045	.045
1	238	.045	.04	.045	

SUMMARY OF REACH LENGTHS

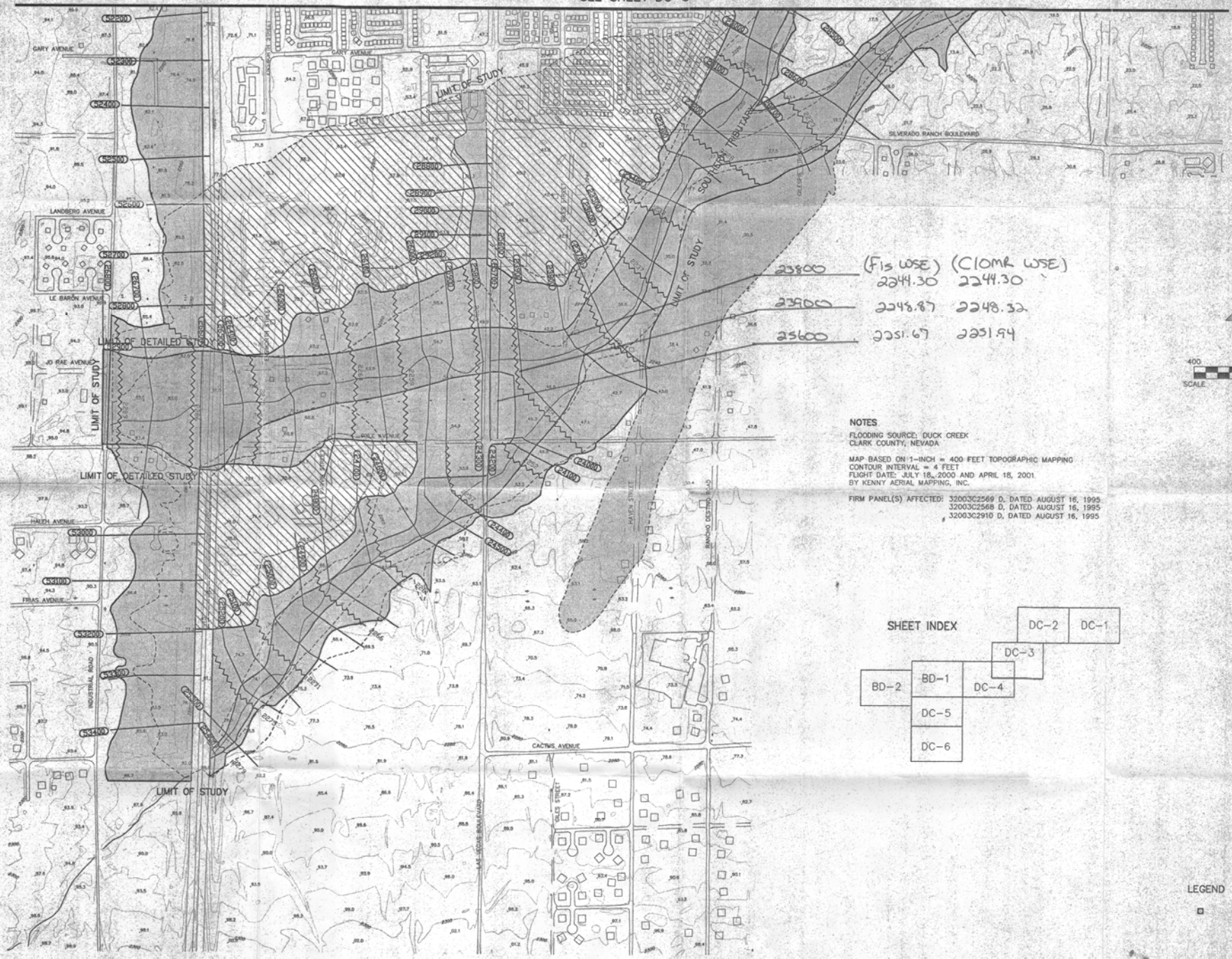
River: Outlet

	Reach	River Sta.	Left	Channel	Right
1		242	77	77	77
1		241.5	58.85	87.57	78.26
1		241.375*	58.85	87.57	78.26
1		241.25*	58.85	87.57	78.26
1		241.125*	58.85	87.57	78.26
1		241	51.4	90.06	83.44
1		240	101.5	87.25	84
1		239.75*	101.5	87.25	84
1		239.5*	101.5	87.25	84
1		239.25*	101.5	87.26	84
1		239	63.5	92.46	92.14
1		238.833*	63.5	92.46	92.14
1		238.666*	63.5	92.46	92.14
1		238.5*	63.5	92.46	92.14
1		238.333*	63.5	92.46	92.14
1		238.166*	63.5	92.46	92.14
1		238	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Outlet

	Reach	River Sta.	Contr.	Expan.
1		242	.1	.3
1		241.5	.1	.3
1		241.375*	.1	.3
1		241.25*	.1	.3
1		241.125*	.1	.3
1		241	.1	.3
1		240	.1	.3
1		239.75*	.1	.3
1		239.5*	.1	.3
1		239.25*	.1	.3
1		239	.1	.3
1		238.833*	.1	.3
1		238.666*	.1	.3
1		238.5*	.1	.3
1		238.333*	.1	.3
1		238.166*	.1	.3
1		238	.1	.3

SEE SHEET DC-5



	(Fis WSE)	(CLOMR WSE)
23800	2244.30	2244.30
23900	2248.87	2248.32
25600	2251.67	2251.94

NORTH

SCALE 1" = 400'

400 0 400 800

SCALE FEET

NOTES

FLOODING SOURCE: DUCK CREEK
CLARK COUNTY, NEVADA

MAP BASED ON 1-INCH = 400 FEET TOPOGRAPHIC MAPPING
CONTOUR INTERVAL = 4 FEET
FLIGHT DATE: JULY 18, 2000 AND APRIL 18, 2001
BY KENNY AERIAL MAPPING, INC.

FIRM PANEL(S) AFFECTED: 32003C2569 D, DATED AUGUST 16, 1995
32003C2568 D, DATED AUGUST 16, 1995
32003C2910 D, DATED AUGUST 16, 1995

SHEET INDEX

LEGEND

ELEVATION REFERENCE MARKER

RECEIVED
FEB 0 1 2002
STANTEC

North Basin 9

FEB 0 5 2002

EASEMENTS AND EXCEPTIONS

LAND TITLE OF NEVADA, INC., PRELIMINARY TITLE REPORT NO. 00218578 DJG, DATED: SEPTEMBER 11, 2000

⬡ INDICATES PLOTTABLE EASEMENTS

EXCEPTIONS

THE FOLLOWING ITEMS AFFECT ALL PARCELS:

⬡6. THE TERMS EASEMENTS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : DECISION RIGHT-OF-WAY GRANTED
RECORDED : JANUARY 2, 1970
BOOK NO. : 1
DOCUMENT NO. : 204, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

(AFFECTS A PORTION OF SAID LAND)

⬡7. THE TERMS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : RESOLUTION RELATIVE TO ACQUISITION OF RIGHTS-OF WAY
RECORDED : NOVEMBER 6, 1975
BOOK NO. : 568
DOCUMENT NO. : 527123, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

8. THE TERMS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : RESOLUTION OF RELINQUISHMENT
RECORDED : JANUARY 21, 1982
BOOK NO. : 1513
DOCUMENT NO. : 1472121, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

9. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 51
PAGE : 46
RECORDED : MAY 3, 1989
BOOK NO. : 890503
DOCUMENT NO. : 00506, OFFICIAL RECORDS

10. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 92
PAGE : 48
RECORDED : NOVEMBER 18, 1997
BOOK NO. : 971118
DOCUMENT NO. : 00979, OFFICIAL RECORDS

11. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 100
PAGE : 65
RECORDED : FEBRUARY 17, 1999
BOOK NO. : 990217
DOCUMENT NO. : 02313, OFFICIAL RECORDS

12. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 102
PAGE : 16
RECORDED : APRIL 26, 1999
BOOK NO. : 990426
DOCUMENT NO. : 00439, OFFICIAL RECORDS

13. SUBJECT TO THE RIGHTS OF THE PUBLIC TO USE THAT PORTION OF SAID LAND LYING WITHIN LAS VEGAS BOULEVARD SOUTH, STATE HIGHWAY 91-466

THE FOLLOWING ITEMS AFFECT PARCEL 1:

⬡15. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

16. ANY EASEMENT FOR THE CONSTRUCTION AND MAINTENANCE OF WATER PIPELINES AND INCIDENTAL PURPOSES, SAID EASEMENT BEING DISCLOSED BY THAT RELINQUISHMENT OF TEMPORARY CONSTRUCTION EASEMENT RECORDED JANUARY 20, 1998, IN BOOK 980120, OF OFFICIAL RECORDS, AS INSTRUMENT NO. 00518.

THE FOLLOWING ITEMS AFFECT PARCEL 2:

⬡18. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : OCTOBER 2, 1961
BOOK NO. : 321
DOCUMENT NO. : 259307, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

19. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 51
PAGE : 46
RECORDED : MAY 3, 1989
BOOK NO. : 890503
DOCUMENT NO. : 00056, OFFICIAL RECORDS

⬡20. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : PIPELINES
IN FAVOR OF : SOUTHERN NEVADA WATER AUTHORITY
RECORDED : JUNE 13, 1996
BOOK NO. : 960613
DOCUMENT NO. : 01347, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 3:

⬡22. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : FEBRUARY 27, 1961
DOCUMENT NO. : 230170, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

EASEMENTS AND EXCEPTIONS (CONTINUED)

23. ANY EASEMENT OR LESSER RIGHT FOR THE PURPOSES STATED HEREIN INCLUDING INCIDENTAL PURPOSES DISCLOSED BY A SURVEY OR INSPECTION OF SAID LAND:
FOR : ROADWAY
AFFECTS : THE NORTHWEST CORNER OF SAID LAND

⬡24. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : PIPELINES
IN FAVOR OF : SOUTHERN NEVADA WATER AUTHORITY
RECORDED : NOVEMBER 22, 1996
BOOK NO. : 961122
DOCUMENT NO. : 00799, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 4:

⬡26. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JULY 12, 1984
BOOK NO. : 1954
DOCUMENT NO. : 1913797, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

27. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 51
PAGE : 46
RECORDED : MAY 3, 1989
BOOK NO. : 890503
DOCUMENT NO. : 00506, OFFICIAL RECORDS

⬡28. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : PIPELINES
IN FAVOR OF : SOUTHERN NEVADA WATER AUTHORITY
RECORDED : AUGUST 21, 1996
BOOK NO. : 960821
DOCUMENT NO. : 01300, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 5:

⬡30. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 5, 1960
BOOK NO. : 271
DOCUMENT NO. : 219946, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

31. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRIC TRANSMISSION AND/OR DISTRIBUTION LINE OR SYSTEM
IN FAVOR OF : AMARGOSA VALLEY COOPERATIVE, INC., A COOPERATIVE CORPORATION
RECORDED : JUNE 3, 1985
BOOK NO. : 2119
DOCUMENT NO. : 2078853, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.
(BLANKET EASEMENT)

⬡32. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : PIPELINES
IN FAVOR OF : SOUTHERN NEVADA WATER AUTHORITY
RECORDED : AUGUST 7, 1996
BOOK NO. : 960807
DOCUMENT NO. : 00433, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

⬡33. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : TEMPORARY CONSTRUCTION PURPOSES
IN FAVOR OF : SOUTHERN NEVADA WATER AUTHORITY
RECORDED : AUGUST 7, 1996
BOOK NO. : 960807
DOCUMENT NO. : 00434, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

34. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : DECEMBER 29, 1997
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : JOE GUSKI, A WIDOWER
AMOUNT : $150,000.00
RECORDED : JANUARY 9, 1998
BOOK NO. : 980109
DOCUMENT NO. : 00231, OFFICIAL RECORDS

THE FOLLOWING ITEM AFFECT PARCEL 6:

⬡36. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JUNE 13, 1961
BOOK NO. : 302
DOCUMENT NO. : 244662, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED JUNE 13, 1961 IN BOOK 302 OF OFFICIAL RECORDS AS DOCUMENT NO. 244662.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCELS 7 THROUGH 14:

⬡39. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

EASEMENTS AND EXCEPTIONS (CONTINUED)

THE FOLLOWING ITEMS AFFECT PARCEL 15:

⬡41. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JUNE 18, 1976
BOOK NO. : 632
DOCUMENT NO. : 591272, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

42. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : JULY 23, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : SUSAN L. YUSI MANION
AMOUNT : $90,000.00
RECORDED : JULY 31, 1996
BOOK NO. : 960731
DOCUMENT NO. : 02206, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 16:

⬡44. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 31, 1976
BOOK NO. : 655
DOCUMENT NO. : 614938, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

45. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : JULY 1, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : NORMA VANGELOS, SUCCESSOR TRUSTEE OF THE ROBERT FREDERICK PICARDO TRUST U/A DATED APRIL 23, 1981
AMOUNT : $88,000.00
RECORDED : AUGUST 9, 1996
BOOK NO. : 960809
DOCUMENT NO. : 00284, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 17:

⬡47. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JANUARY 15, 1997
BOOK NO. : 970115
DOCUMENT NO. : 00357, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 18:

⬡49. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JULY 5, 1961
BOOK NO. : 306
DOCUMENT NO. : 247681, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED JULY 5, 1961 IN BOOK 306 OF OFFICIAL RECORDS AS DOCUMENT NO. 247681.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 19:

⬡51. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JULY 20, 1983
BOOK NO. : 1773
DOCUMENT NO. : 1732959, OFFICIAL RECORDS

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 20:

⬡53. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 29, 1960
BOOK NO. : 275
DOCUMENT NO. : 222721, OFFICIAL RECORDS

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 21:

⬡55. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JANUARY 13, 1961
BOOK NO. : 278
DOCUMENT NO. : 225320, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED JANUARY 13, 1961 IN BOOK 278 OF OFFICIAL RECORDS AS DOCUMENT NO. 225320.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 22:

⬡57. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : OCTOBER 2, 1961
DOCUMENT NO. : 259308, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

⬡58. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : POWER AND COMMUNICATION
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : JULY 11, 1973
BOOK NO. : 345
DOCUMENT NO. : 304094, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • COST CONTROLLING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146 (702)258-0115

GREEN PARK HOLDINGS, LLC
ALTA/ACSM LAND TITLE SURVEY

SHEET 3 OF 10

MAR 2 6 2002

S:\0288\0020\ALTA\02880020-ALTA1.DWG

ALTA/ACSM LAND TITLE SURVEY

A PORTION OF THE WEST HALF (W 1/2) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA

LEGAL DESCRIPTION

PARCEL ONE (1):

THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TWO (2):

THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M. NEVADA.

PARCEL THREE (3):

THE EAST HALF (E 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FOUR (4):

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIVE (5):

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL SIX (6):

THE NORTH ONE-HALF (N 1/2) OF THE NORTH ONE-HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M. NEVADA.

EXCEPTING THEREFROM THE NORTH FIFTY (50) FEET AS CONVEYED TO CLARK COUNTY, BY DEED RECORDED APRIL 9, 1973 IN BOOK 316 OF OFFICIAL RECORDS, CLARK COUNTY, NEVADA RECORDS, AS DOCUMENT NO. 275855.

EXCEPTING THEREFROM ANY PORTION OF SAID LAND LYING WITHIN STATE HIGHWAY 91-466.

PARCEL SEVEN (7):

THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL EIGHT (8):

THE EAST HALF (E 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B & M.

PARCEL NINE (9):

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TEN (10):

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL ELEVEN (11):

THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TWELVE (12):

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL THIRTEEN (13):

THE EAST HALF (E 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4)OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FOURTEEN (14):

THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTEEN (15):

THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B & M.

EXCEPTING THEREFROM THOSE PORTIONS DESIGNATED AS COUNTY ROADS BY CLARK COUNTY IN DOCUMENT RECORDED NOVEMBER 6, 1975 IN BOOK 568 AS DOCUMENT NO. 527123, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

PARCEL SIXTEEN (16):

THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL SEVENTEEN (17):

THE WEST HALF (W 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL EIGHTEEN (18):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO CLARK COUNTY FOR ROAD PURPOSES BY GRANT, BARGAIN, SALE DEED, RECORDED APRIL 9, 1973 IN BOOK 316 AS INSTRUMENT NO. 275855 OF OFFICIAL RECORDS.

PARCEL NINETEEN (19):

THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TWENTY (20):

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TWENTY-ONE (21):

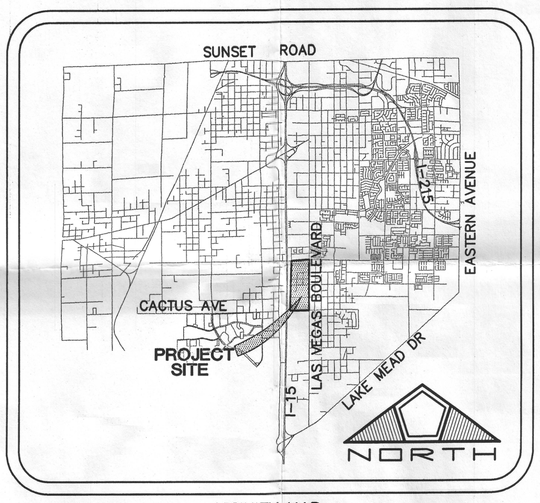
THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

EXCEPTING THEREFROM THE NORTH THIRTY (30) FEET AS CONVEYED TO CLARK COUNTY BY DEED RECORDED APRIL 25, 1973 AS DOCUMENT NO. 280898 OF OFFICIAL RECORDS.
FURTHER EXCEPTING THEREFROM ANY PORTION LYING WITHIN STATE HIGHWAY NO. 91-466.

PARCEL TWENTY-TWO (22):

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

EXCEPTING THEREFROM ANY PORTION OF SAID LAND LYING WITHIN LAS VEGAS BOULEVARD (STATE HIGHWAY 91-466)



VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTION (CONTINUED)

PARCEL TWENTY-THREE (23):

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

PARCEL TWENTY-FOUR (24):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THAT PORTION LYING WITHIN HIGHWAY 91.
ALSO EXCEPTING THEREFROM THAT PORTION RELINQUISHED TO CLARK COUNTY IN RESOLUTION OF RELINQUISHMENT RECORDED JANUARY 21, 1982 IN BOOK 1513 AS DOCUMENT NO. 1472121, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

PARCEL TWENTY-FIVE A (25 A) THROUGH TWENTY-FIVE I (25 I):

PARCEL 25-A:

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET AND THE SOUTH 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-B:

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-C:

THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET, THE WEST 30 FEET AND THE SOUTH 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE NORTHWEST CORNER THEREOF CONCAVE SOUTHEASTERLY AND BEING TANGENT TO THE SOUTH LINE OF SAID NORTH 30 FEET AND TANGENT TO THE EAST LINE OF SAID WEST 30 FEET, ALSO TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-D:

THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE SOUTH 30 FEET AND THE EAST 30 FEET, TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHEAST CORNER THEREOF CONCAVE NORTHWESTERLY AND BEING TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET AND TANGENT TO THE WEST LINE OF SAID EAST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-E:

THE WEST HALF (W 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-F:

THE WEST HALF (W 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE SOUTH 40 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25-G:

THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET AND THE WEST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE NORTHWEST CORNER THEREOF CONCAVE SOUTHEASTERLY AND BEING TANGENT TO THE SOUTH LINE OF SAID NORTH 30 FEET AND TANGENT TO THE EAST LINE OF SAID WEST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

SURVEYOR'S COMMENTS

1. THE PROPERTY DESCRIBED HEREON IS LOCATED IN THE FOLLOWING ZONES: ZONE X AREAS OF 500-YEAR FLOOD; AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD, ZONE A NO BASE FLOOD ELEVATIONS DETERMINED AND IN ZONE AE BASE FLOOD ELEVATIONS DETERMINED AS DEFINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY FLOOD INSURANCE RATE MAP FOR CLARK COUNTY, NEVADA AND INCORPORATED AREAS, COMMUNITY PANEL NO. 2568 OF 4090, MAP NUMBER 32003C2568 D, EFFECTIVE DATE: AUGUST 16, 1995.

2. NET AREA = 179.46 ACRES
   PARCEL A 0.14 ACRES
   PARCEL C 0.83 ACRES
   PARCEL D 0.47 ACRES
   PARCEL E 0.18 ACRES
   PARCEL F 0.35 ACRES
   PARCEL G 0.14 ACRES
   PARCEL H 0.32 ACRES
   PARCEL I 0.14 ACRES
   PARCEL J 0.70 ACRES
   PARCEL K 0.74 ACRES
   GROSS AREA = 183.47 ACRES

3. NO VISIBLE EVIDENCE OF CEMETERIES OR BURIAL GROUNDS.

4. ANY BURIED UTILITIES OR PIPELINES ARE AS SHOWN PER SURFACE EVIDENCE. PENTACORE WAS NOT SUPPLIED WITH "AS-BUILT" DRAWINGS OF CONSTRUCTED UTILITY LINES. PENTACORE AND THE SURVEYOR OF RECORD WILL NOT BE LIABLE FOR THE LOCATION OR THE FAILURE TO NOTE THE LOCATION OF NONVISIBLE UTILITIES.

5. NO ATTEMPT HAS BEEN MADE TO RESEARCH UTILITY SERVICE CONNECTIONS. FOR FURTHER INFORMATION REGARDING LOCATION, DEPTH OR SIZE OF UTILITIES, CONTACT THE APPROPRIATE UTILITY COMPANY:

   CALL BEFORE YOU DIG / 1-800-227-2600

ELECTRIC	NEVADA POWER COMPANY 6226 W. SAHARA AVE., LAS VEGAS, NEVADA	(702) 367-5000
TELEPHONE	SPRINT 330 S. VALLEY VIEW, LAS VEGAS, NEVADA	(702) 877-7963
GAS	SOUTHWEST GAS 4300 W. TROPICANA, LAS VEGAS, NEVADA	(702) 365-1555
WATER	LAS VEGAS VALLEY WATER DISTRICT 3700 W. CHARLESTON, LAS VEGAS, NEVADA	(702) 870-2011
SEWER	CLARK COUNTY SANITATION DISTRICT 5857 E. FLAMINGO, LAS VEGAS, NEVADA	(702) 458-1180
CABLE TV	COX COMMUNICATIONS LAS VEGAS, INC. 121 S. MARTIN LUTHER KING, LAS VEGAS, NEVADA	(702) 384-8084

6. THE FOLLOWING PARCELS ARE ZONED (R-E) RURAL ESTATES:
   1, 2, 3, 7, 11, 12, 13, 14, 15, 16, 19, 26, 30, 33, 36, 40, 44A-44E, 48, 51, 54, 57, 58, 59, 61, 62, 63, 64, 65
   MINIMUM SETBACKS (R-E) ZONING
   FRONT: 40'
   SIDE: 10'
   CORNER: 15'
   REAR: 30'
   THE FOLLOWING PARCELS ARE ZONED (H-1) LIMITED RESORT AND APARTMENT:
   4, 5, 6, 8, 9, 10, 17, 18, 20, 21, 22, 23, 24, 25A-25I, 27, 28, 29, 31, 32, 34, 35, 37, 38, 39, 41, 42, 43, 45, 46, 47, 49, 50, 52A-52D, 53, 55, 56, 60
   MINIMUM SETBACKS (H-1) ZONING
   FRONT: 10'
   SIDE: 10% WIDTH OF LOT, 5' MIN-50' MAX
   CORNER: 10% WIDTH OF LOT, 20' MIN-50' MAX
   REAR: 20' ADJACENT TO RESIDENTIAL

BASIS OF BEARINGS

SOUTH 89°08'18" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THAT CERTAIN MAP ON FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 100 OF SURVEYS, AT PAGE 65.

REFERENCE MAPS

FILE 41, PAGE 28 OF SURVEYS
FILE 51, PAGE 46 OF SURVEYS
FILE 56, PAGE 64 OF SURVEYS
FILE 92, PAGE 48 OF SURVEYS
FILE 32, PAGE 45 OF PARCEL MAPS
FILE 64, PAGE 46 OF PARCEL MAPS
FILE 67, PAGE 39 OF PARCEL MAPS
FILE 70, PAGE 89 OF PARCEL MAPS
FILE 79, PAGE 36 OF PARCEL MAPS

SURVEYOR'S CERTIFICATE

TO: GREEN PARK HOLDINGS, LLC
LAND TITLE OF NEVADA, INC

THIS IS TO CERTIFY THAT THIS PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY THE AMERICAN LAND TITLE ASSOCIATION, THE AMERICAN CONGRESS ON SURVEYING AND MAPPING AND THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS IN 1999, AND INCLUDES OPTIONAL ITEMS 1, 2, 3, 4, 5, 6, 8, 10, 11, 13, 14, AND 16 OF TABLE A THEREOF. PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY THE AMERICAN LAND TITLE ASSOCIATION, THE NATIONAL SOCIETY OF PROFESSIONAL SURVEYORS AND THE AMERICAN CONGRESS ON SURVEYING AND MAPPING AND IN EFFECT ON THE DATE THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT THE POSITIONAL UNCERTAINTIES RESULTING FROM THE SURVEY MEASUREMENTS MADE ON THE SURVEY DO NOT EXCEED THE ALLOWABLE POSITIONAL TOLERANCE.

THE EASEMENTS AND OTHER RECORDED DATA SHOWN HEREON WERE OBTAINED FROM TITLE REPORT BY LAND TITLE OF NEVADA, INC, NO. 00218578 DJG, DATED SEPTEMBER 11, 2000. THE CERTIFYING SURVEYOR HAS NOT MADE AN INDEPENDENT TITLE SEARCH AND HAS RELIED ON THE SUPPLIED DOCUMENTS AND SPECIFICALLY DISCLAIMS ANY ITEMS NOT SHOWN WHICH MAY BE OF RECORD OR NOT OF RECORD THAT MAY AFFECT THE PROPERTY SHOWN ON THE SURVEY. THIS SURVEY WAS COMPLETED ON NOVEMBER 8, 2000.

FREDERICK W. ORBAN
PROFESSIONAL LAND SURVEYOR
NEVADA LICENSE NO. 4541

3	REVISED LOCATION OF EXCEPTION NO. 65	03/11/02	
2	REVISED RIGHTS-OF-WAY	11/29/00	
1	REVISED AREAS	11/27/00	

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • COST CONSULTING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146 (702)258-0115

GREEN PARK HOLDINGS, LLC
ALTA/ACSM LAND TITLE SURVEY

SHEET 1 OF 10

S:\0288\0020\ALTA\0288020-ALTA1.DWG

MAR 2 6 2002

LEGAL DESCRIPTION (CONTINUED)

PARCEL 25–H:

THE EAST HALF (E 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE SOUTH 40 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 25–I:

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET AND THE WEST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE NORTHWEST CORNER THEREOF CONCAVE SOUTHEASTERLY AND BEING TANGENT TO THE SOUTH LINE OF SAID NORTH 30 FEET AND TANGENT TO THE EAST LINE OF SAID WEST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL TWENTY–SIX (26):

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THE NORTH THIRTY (30) FEET AND THE EAST THIRTY (30) FEET AS CONVEYED TO CLARK COUNTY BY DEED RECORDED AUGUST 13, 1979 AS DOCUMENT NO. 1060130, OF OFFICIAL RECORDS.

PARCEL TWENTY–SEVEN (27):

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL TWENTY–EIGHT (28):

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM:
ANY PORTION OF SAID LAND LYING WITHIN STATE HIGHWAY 91–466 AS THE SAME EXISTS NOW.

PARCEL TWENTY–NINE (29):

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM ANY PORTION OF SAID LAND LYING WITHIN THE BOUNDARIES OF STATE HIGHWAY 91–465.

PARCEL THIRTY (30):

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL THIRTY–ONE (31):

THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22, RANGE 61 EAST, M.D.B. & M.

PARCEL THIRTY–TWO (32):

THE EAST HALF (E 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

PARCEL THIRTY–THREE (33):

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THAT PORTION CONVEYED TO CLARK COUNTY IN DEED RECORDED JANUARY 13, 1995 IN BOOK 950113 AS DOCUMENT NO. 00968, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

PARCEL THIRTY–FOUR (34):

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM ANY PORTION OF SAID LAND LYING WITHIN THE STATE HIGHWAY 91–466 AS THE SAME NOW EXISTS.

PARCEL THIRTY–FIVE (35):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET AND THE SOUTH 40 FEET TOGETHER WITH A 20 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 40 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL THIRTY–SIX (36):

THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL THIRTY–SEVEN (37):

THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

PARCEL THIRTY–EIGHT (38):

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. M.

PARCEL THIRTY–NINE (39):

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM ANY PORTION LYING WITHIN STATE HIGHWAY 91–466.

PARCEL FORTY (40):

THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

PARCEL FORTY–ONE (41):

THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.

PARCEL FORTY–TWO (42):

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., CLARK COUNTY, NEVADA.
EXCEPTING THEREFROM ANY PORTION LYING EASTERLY OF THE WESTERLY RIGHT OF WAY LINE OF STATE HIGHWAY 91–466 AS ESTABLISHED BY CERTIFICATE OF ABANDONMENT RECORDED JANUARY 21, 1982 AS DOCUMENT NO. 1472122, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

LEGAL DESCRIPTION (CONTINUED)

PARCEL FORTY–THREE (43):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THE SOUTH THIRTY (30) FEET OF LAND, AS CONVEYED TO CLARK COUNTY FOR ROAD AND INCIDENTAL PURPOSES, BY GRANT DEED RECORDED MAY 9, 1973, IN BOOK 326 AS INSTRUMENT NO. 285365, OF OFFICIAL RECORDS, CLARK COUNTY, NEVADA.
ALSO SAVING AND EXCEPTING THEREFROM ANY PORTION LYING WITHIN STATE HIGHWAY 91–466 THEREOF.

PARCEL FORTY–FOUR "A" (44 "A") THROUGH FORTY–FOUR "E" (44 "E"):

PARCEL 44–A:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET, THE WEST 30 FEET AND THE SOUTH 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE NORTHWEST CORNER THEREOF CONCAVE SOUTHEASTERLY AND BEING TANGENT TO THE SOUTH LINE OF SAID NORTH 30 FEET AND TANGENT TO THE EAST LINE OF SAID WEST 30 FEET, ALSO TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 44–B:

THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE SOUTH 30 FEET AND THE EAST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHEAST CORNER THEREOF CONCAVE NORTHWESTERLY AND BEING TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET AND TANGENT TO THE WEST LINE OF SAID EAST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 44–C:

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET AND THE SOUTH 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF THE WEST 30 FEET AND TANGENT TO THE NORTH LINE OF THE SOUTH 30 FEET, FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 44–D:

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 44–E:

THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET, THE SOUTH 30 FEET AND THE EAST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET, ALSO TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHEAST CORNER THEREOF CONCAVE NORTHWESTERLY AND BEING TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET AND TANGENT TO THE WEST LINE OF SAID EAST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL FORTY–FIVE (45):

THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FORTY–SIX (46):

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM ANY PORTION LYING WITHIN LAS VEGAS BOULEVARD SOUTH (STATE HIGHWAY 91–466) ON THE EAST.

PARCEL FORTY–SEVEN (47):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPT THE INTEREST IN THE SOUTH THIRTY (30) FEET OF SAID LAND AS CONVEYED TO COUNTY OF CLARK BY DEED RECORDED APRIL 9, 1973 AS DOCUMENT NO. 275856, OFFICIAL RECORDS.

PARCEL FORTY–EIGHT (48):

THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FORTY–NINE (49):

THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTY (50):

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THAT PORTION CONVEYED TO CLARK COUNTY IN DEED RECORDED APRIL 25, 1973 IN BOOK 321 OF OFFICIAL RECORDS AS DOCUMENT NO. 280899, CLARK COUNTY, NEVADA.

PARCEL FIFTY–ONE (51):

THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTY–TWO A (52 A) THROUGH FIFTY–TWO D (52 D):

PARCEL 52–A:

THE NORTH HALF (N 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 52–B:

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

LEGAL DESCRIPTION (CONTINUED)

PARCEL 52–C:

THE SOUTH HALF (S 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE WEST 30 FEET, THE SOUTH 30 FEET AND THE EAST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF SAID WEST 30 FEET AND TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET, ALSO TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE SOUTHEAST CORNER THEREOF CONCAVE NORTHWESTERLY AND BEING TANGENT TO THE NORTH LINE OF SAID SOUTH 30 FEET AND TANGENT TO THE WEST LINE OF SAID EAST 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL 52–D:

THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE NORTH 30 FEET AND THE EAST 30 FEET TOGETHER WITH A 15 FOOT SPANDREL AREA IN THE NORTHEAST CORNER THEREOF CONCAVE SOUTHWESTERLY AND BEING TANGENT TO THE WEST LINE OF THE EAST 30 FEET AND TANGENT TO THE SOUTH LINE OF SAID NORTH 30 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.

PARCEL FIFTY–THREE (53):

THE SOUTH HALF (S 1/2) OF THE SOUTH HALF (S 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
ANY PORTION OF SAID LAND LYING WITHIN STATE HIGHWAY 91–466 AS THE SAME EXISTS NOW.

PARCEL FIFTY–FOUR (54):

THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTY–FIVE (55):

THE NORTH HALF (N 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM THAT PORTION LYING WITHIN STATE HIGHWAY 41–466 (LAS VEGAS BLVD. SOUTH)

PARCEL FIFTY–SIX (56):

THE SOUTH HALF (S 1/2) OF THE NORTH HALF (N 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
EXCEPTING THEREFROM ANY PORTION LYING WITHIN STATE HIGHWAY NO. 91–466.

PARCEL FIFTY–SEVEN (57):

THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTY–EIGHT (58):

THE EAST HALF (E 1/2) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL FIFTY–NINE (59):

THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.
SUBJECT TO AN EASEMENT OVER THE SOUTH 60 FEET AND THE WEST 30 FEET TOGETHER WITH A 54 FOOT SPANDREL AREA IN THE SOUTHWEST CORNER THEREOF CONCAVE NORTHEASTERLY AND BEING TANGENT TO THE EAST LINE OF THE WEST 30 FEET AND THE NORTH LINE OF THE SOUTH 60 FEET FOR ROAD, PUBLIC UTILITIES, AND FLOOD CONTROL PURPOSES TO INSURE CONTINUED INGRESS AND EGRESS TO ADJACENT LANDS IN FAVOR OF THE COUNTY OF CLARK, STATE OF NEVADA.
EXCEPTING THEREFROM ANY PORTION OF SAID LAND LYING WITHIN THE BOUNDARIES OF STATE HIGHWAY 91–466.

PARCEL SIXTY (60):

THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL SIXTY–ONE (61):

THAT PORTION OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., DESCRIBED AS FOLLOWS:
LOT ONE (1) OF THE CERTAIN PARCEL MAP ON FILE IN FILE 32, PAGE 45, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

PARCEL SIXTY–TWO (62):

THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL SIXTY–THREE (63):

THAT PORTION OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M., DESCRIBED AS FOLLOWS:
LOT ONE (1) OF THAT CERTAIN PARCEL MAP ON FILE IN FILE 70, PAGE 89, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

PARCEL SIXTY–FOUR (64):

THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

PARCEL SIXTY–FIVE (65):

THE NORTHEAST QUARTER (NE 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.B. & M.

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • ADA CONSULTING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146 (702)258–0115

GREEN PARK HOLDINGS, LLC

ALTA/ACSM LAND TITLE SURVEY

SHEET 2 OF 10

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EASEMENTS AND EXCEPTIONS (CONTINUED)

(66) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL LINES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : MAY 14, 1980
BOOK NO. : 1227
DOCUMENT NO. : 1186290, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

167. EASEMENTS AND DEDICATIONS AND RESTRICTIONS AS PROVIDED FOR OR DELINEATED ON THE PLAT OF SAID PARCEL MAP ON FILE IN FILE 32 OF PARCEL MAPS, PAGE 45 IN THE OFFICE OF THE COUNTY RECORDER, CLARK COUNTY, NEVADA.

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 62:

169. RESERVATIONS AS CONTAINED IN THE PATENT CONVEYING SAID LAND.
NOTE: IT IS REQUIRED THAT THE ORIGINAL PATENT, OR CERTIFIED COPY THEREOF, BE RECORDED PRIOR TO THE CLOSE OF THIS TRANSACTION

THE FOLLOWING ITEMS AFFECT PARCEL 63:

173. RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : OCTOBER 2, 1962
BOOK NO. : 390
DOCUMENT NO. : 314830, OFFICIAL RECORDS

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

174. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL LINES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : NOVEMBER 30, 1983
BOOK NO. : 1840
DOCUMENT NO. : 1799264, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.
(DOES NOT AFFECTS PROPERTY)

175. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 41
PAGE : 28
RECORDED : FEBRUARY 27, 1984
BOOK NO. : 1881
DOCUMENT NO. : 1840335, OFFICIAL RECORDS

176. COVENANTS, CONDITIONS AND RESTRICTIONS AND EASEMENTS, IF ANY, (BUT DELETING ANY COVENANT, CONDITION OR RESTRICTIONS INDICATING A PREFERENCE, LIMITATION OR DISCRIMINATION BASED UPON RACE, COLOR, RELIGION, SEX, HANDICAP, FAMILIAL STATUS OR NATIONAL ORIGIN TO THE EXTENT SUCH COVENANTS, CONDITIONS OR RESTRICTIONS VIOLATE 42 USC 3604 (C)), IN AN INSTRUMENT:
RECORDED : MAY 24, 1984
BOOK NO. : 1926
DOCUMENT NO. : 1885327, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

177. EASEMENTS AND DEDICATIONS AND RESTRICTIONS AS PROVIDED FOR OR DELINEATED ON THE PLAT OF SAID PARCEL MAP ON FILE IN FILE 70 OF PARCEL MAPS, PAGE 89 IN THE OFFICE OF THE COUNTY RECORDER, CLARK COUNTY, NEVADA.

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

(78) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL LINES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : DECEMBER 31, 1992
BOOK NO. : 921231
DOCUMENT NO. : 01957, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

179. ANY EASEMENT NOT VACATED BY THAT CERTAIN ORDER OF VACATION:
RECORDED : MARCH 4, 1993
BOOK NO. : 930304
DOCUMENT NO. : 00550, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

180. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : APRIL 1, 1996
TRUSTOR : PHIL DAVIS, A MARRIED MAN AS HIS SOLE AND SEPARATE PROPERTY
TRUSTEE : NEVADA TITLE COMPANY, A NEVADA CORPORATION
BENEFICIARY : RUTH D. HAMPE, TRUSTEE OF THE STEPHEN J. HAMPE AND RUTH D. HAMPE FAMILY TRUST DATED DECEMBER 23, 1992
AMOUNT : $50,000.00
RECORDED : APRIL 2, 1996
BOOK NO. : 960402
DOCUMENT NO. : 00217, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 64:

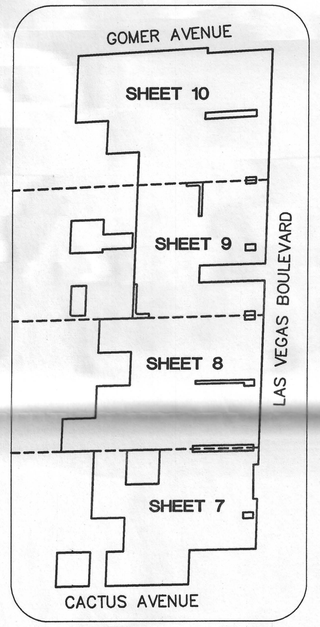
182. RESERVATIONS AS CONTAINED IN THE PATENT CONVEYING SAID LAND.
NOTE: IT IS REQUIRED THAT THE ORIGINAL PATENT, OR A CERTIFIED COPY THEREOF, BE RECORDED PRIOR TO THE CLOSE OF THIS TRANSACTION.

(183) EASEMENTS, TERMS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : UNITED STATES, DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT,
RIGHT-OF-WAY/TEMPORARY USE PERMIT
RECORDED : AUGUST 31, 1993
BOOK NO. : 930831
DOCUMENT NO. : 01745, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 65:

(87) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : APRIL 10, 1973
BOOK NO. : 317
DOCUMENT NO. : 276264, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.
REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.



KEY MAP

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • ADA CONSULTING
6671 WEST CHEYENNE AVENUE
LAS VEGAS, NEVADA 89146 (702)258-0115

GREEN PARK HOLDINGS, LLC
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SHEET 6 OF 10

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EASEMENTS AND EXCEPTIONS (CONTINUED)

(114) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : POWER AND COMMUNICATION FACILITIES
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : JULY 11, 1973
BOOK NO. : 345
DOCUMENT NO. : 304095, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 43:

(116) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : MARCH 20, 1959
BOOK NO. : 191
DOCUMENT NO. : 155403, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT 44A THROUGH 44E:

(118) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 45:

(120) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : MARCH 23, 1981
BOOK NO. : 1372
DOCUMENT NO. : 1331394, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 46:

(122) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : NOVEMBER 16, 1981
BOOK NO. : 1487
DOCUMENT NO. : 1446748, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED NOVEMBER 16, 1981 IN BOOK 1487 OF OFFICIAL RECORDS AS DOCUMENT NO. 1446748.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

123. THE TERMS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : RESOLUTION OF ABANDONMENT
RECORDED : JANUARY 21, 1982
BOOK NO. : 1513
DOCUMENT NO. : 1472122, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 47:

(25) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 22, 1958
DOCUMENT NO. : 148030, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

(26) AN EASEMENT AS SHOWN BELOW AND INCIDENTAL PURPOSES RELATING THERETO AS CONDEMNED BY FINAL DECREE:
FOR : ELECTRIC TRANSMISSION LINE
IN FAVOR OF : NEVADA POWER COMPANY
CASE NO. : A62196
RECORDED: FEBRUARY 23, 1973
BOOK NO. : 304
DOCUMENT NO. : 263445, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

127. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : MAY 30, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : THE LUCILLE KAMINSKI REVOCABLE TRUST, DATED JULY 24, 1991; LUCILLE KAMINSKI AS TRUSTEE
AMOUNT : $135,000.00
RECORDED : JUNE 7, 1996
BOOK NO. : 960607
DOCUMENT NO. : 00438, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 48:

(29) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 17, 1969
BOOK NO. : 999
DOCUMENT NO. : 801918, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

(30) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL AND COMMUNICATION FACILITIES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : MARCH 13, 1990
BOOK NO. : 900313
DOCUMENT NO. : 00544, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

EASEMENTS AND EXCEPTIONS (CONTINUED)

THE FOLLOWING ITEMS AFFECT PARCEL 49:

(32) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 14, 1978
BOOK NO. : 982
DOCUMENT NO. : 941908, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

(33) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL AND COMMUNICATION FACILITIES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : MAY 18, 1990
BOOK NO. : 900518
DOCUMENT NO. : 00759, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

(34) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL AND COMMUNICATION FACILITIES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : MAY 21, 1990
BOOK NO. : 900521
DOCUMENT NO. : 00789, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 50:

(36) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : FEBRUARY 17, 1961
DOCUMENT NO. : 229051, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED FEBRUARY 17, 1961 AS DOCUMENT NO. 229051, OFFICIAL RECORDS.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

(137) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : POWER AND COMMUNICATION
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : JULY 11, 1973
BOOK NO. : 345
DOCUMENT NO. : 304097, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

(138) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL AND COMMUNICATION LINES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : AUGUST 10, 1990
BOOK NO. : 900810
DOCUMENT NO. : 01020, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 51:

(140) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 2, 1978
DOCUMENT NO. : 882554, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

141. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : AUGUST 12, 1997
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : SAM A. BRUNI AND PATRICIA J. BRUNI, HUSBAND AND WIFE AS JOINT TENANTS
AMOUNT : $181,000.00
RECORDED : AUGUST 19, 1997
BOOK NO. : 970819
DOCUMENT NO. : 00148, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 52A THROUGH 52D:

(143) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 53:

(145) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : APRIL 9, 1993
BOOK NO. : 930409
DOCUMENT NO. : 00441, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED APRIL 9, 1993 IN BOOK 930409 OF OFFICIAL RECORDS AS DOCUMENT NO. 00441.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

146. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : SEPTEMBER 5, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : MARINA PLON, M.D., TRUSTEE OF THE MARINA PLON, M.D. LTD. PENSION TRUST AND MARK PLON, M.D., TRUSTEE OF THE MARK PLON, M.D., P.C. PENSION PLAN TRUST AND MARINA PLON, A MARRIED WOMAN
AMOUNT : $400,000.00
RECORDED : SEPTEMBER 11, 1996
BOOK NO. : 960911
DOCUMENT NO. : 01380, OFFICIAL RECORDS
RE-RECORDED : DECEMBER 14, 1998
BOOK NO. : 981214
DOCUMENT NO. : 00316, OFFICIAL RECORDS

(WITH OTHER PROPERTY)

EASEMENTS AND EXCEPTIONS (CONTINUED)

THE FOLLOWING ITEMS AFFECT PARCEL 54:

148. RESERVATIONS AS CONTAINED IN THE PATENT CONVEYING SAID LAND.

THE FOLLOWING ITEMS AFFECT PARCEL 55:

(150) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : FEBRUARY 26, 1960
BOOK NO. : 233
DOCUMENT NO. : 189416, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED FEBRUARY 26, 1960 IN BOOK 233 OF OFFICIAL RECORDS AS DOCUMENT NO. 189416.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 56:

(152) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : APRIL 26, 1996
BOOK NO. : 960426
DOCUMENT NO. : 00076, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM
THE UNITED STATES OF AMERICA, RECORDED APRIL 26, 1996 IN BOOK 960426 OF OFFICIAL RECORDS AS DOCUMENT NO. 00076.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 57:

(154) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 8, 1960
DOCUMENT NO. : 207255, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

(155) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL AND COMMUNICATION LINES
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : JULY 26, 1973
DOCUMENT NO. : 308372, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 58:

(157) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JANUARY 28, 1960
BOOK NO. : 230
DOCUMENT NO. : 186511, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

158. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : JUNE 11, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : LAWRENCE H. SKENANDORE AND BONITA V. SKENANDORE, HUSBAND AND WIFE AS JOINT TENANTS
AMOUNT : $46,000.00
RECORDED : JUNE 19, 1996
BOOK NO. : 960619
DOCUMENT NO. : 00473, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 59:

(160) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 60:

(162) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 9, 1957
DOCUMENT NO. : 112453, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 61

(164) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : MARCH 17, 1978
BOOK NO. : 860
DOCUMENT NO. : 819725, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

165. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : ELECTRICAL LINES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : MAY 14, 1980
BOOK NO. : 1227
DOCUMENT NO. : 1186289, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.
(BLANKET EASEMENT)

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
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EASEMENTS AND EXCEPTIONS (CONTINUED)

59. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : AUGUST 2, 1995
TRUSTOR : BIJAN ANJOMI, AN UNMARRIED MAN
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : SIDNEY DROBKIN AND DORIS DROBKIN, TRUSTEES OF THE DROBKIN FAMILY TRUST
AMOUNT : $150,000.00
RECORDED : SEPTEMBER 25, 1995
BOOK NO. : 950925
DOCUMENT NO. : 00240, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 23:

(61) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : OCTOBER 24, 1978
BOOK NO. : 960
DOCUMENT NO. : 919483, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED OCTOBER 24, 1978 IN BOOK 960 OF OFFICIAL RECORDS AS DOCUMENT NO. 919483.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 24:

(63) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JULY 10, 1961
BOOK NO. : 307
DOCUMENT NO. : 248260, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED JULY 10, 1961 IN BOOK 307 OF OFFICIAL RECORDS AS DOCUMENT NO. 248260.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCELS 25A THROUGH 25I:

(65) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 26:

(67) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JUNE 12, 1961
BOOK NO. : 302
DOCUMENT NO. : 244420, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

68. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 10
PAGE : 21
RECORDED : JUNE 8, 1961
BOOK NO. : 302
DOCUMENT NO. : 244096, OFFICIAL RECORDS

69. A COVENANT AND AGREEMENT EXECUTED BY TONY AND DIANE DECKER IN FAVOR OF COUNTY OF CLARK, RECORDED AUGUST 1, 1979, IN BOOK 1095, OF OFFICIAL RECORDS, AS DOCUMENT NO. 1054645, WHICH AMONG OTHER THINGS, PROVIDED: OFFSITE IMPROVEMENTS.

(70) A GRANT OF EASEMENT FOR THE PERPETUAL RIGHT OF FLIGHT OVER AND ACROSS SAID LAND AS GRANTED TO CLARK COUNTY BY INSTRUMENT:
RECORDED : AUGUST 8, 1979
BOOK NO. : 1099
DOCUMENT NO. : 1058196, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

(71) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : POWER AND COMMUNICATION
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : AUGUST 23, 1979
DOCUMENT NO. : 1065984, OFFICIAL RECORDS
REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

72. AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : UNDERGROUND ELECTRIC SERVICE CABLES
IN FAVOR OF : NEVADA POWER COMPANY
RECORDED : AUGUST 23, 1979
DOCUMENT NO. : 1065985, OFFICIAL RECORDS
REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.
(BLANKET EASEMENT)

THE FOLLOWING ITEMS AFFECT PARCEL 27:

(74) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 28:

(76) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JULY 5, 1961
BOOK NO. : 306
DOCUMENT NO. : 247680, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

EASEMENTS AND EXCEPTIONS (CONTINUED)

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED JULY 5, 1961 IN BOOK 306 OF OFFICIAL RECORDS AS DOCUMENT NO. 247680.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

77. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : SEPTEMBER 5, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : LAND TITLE OF NEVADA, INC., A NEVADA CORPORATION
BENEFICIARY : MARINA PLON, M.D., TRUSTEE OF THE MARINA PLON, M.D. LTD. PENSION TRUST, AND MARK PLON M.D., TRUSTEE OF THE MARK PLON, M.D., P.C. PENSION PLAN TRUST AND MARINA PLON, A MARRIED WOMAN
AMOUNT : $400,000.00
RECORDED : SEPTEMBER 11, 1996
BOOK NO. : 960911
DOCUMENT NO. : 01380, OFFICIAL RECORDS
RE-RECORDED : DECEMBER 14, 1998
BOOK NO. : 981214
DOCUMENT NO. : 00316, OFFICIAL RECORDS
(WITH OTHER PROPERTY)

THE FOLLOWING ITEMS AFFECT PARCEL 29:

(79) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : DECEMBER 16, 1980
BOOK NO. : 1281
DOCUMENT NO. : 1240259, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED DECEMBER 16, 1980 IN BOOK 1281 OF OFFICIAL RECORDS AS DOCUMENT NO. 1240259.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

80. A DEED OF TRUST TO SECURE INDEBTEDNESS OF THE AMOUNT STATED HEREIN AND ANY OTHER AMOUNTS PAYABLE UNDER THE TERMS THEREOF:
DATED : APRIL 3, 1996
TRUSTOR : PERMA-BILT, A NEVADA CORPORATION
TRUSTEE : FIDELITY NATIONAL TITLE AGENCY OF NEVADA INC., A NEVADA CORPORATION
BENEFICIARY : LYNDEL H. WEST AND DOLORES I. WEST, HUSBAND AND WIFE AS JOINT TENANTS
AMOUNT : $200,000.00
RECORDED : JUNE 20, 1996
BOOK NO. : 960620
DOCUMENT NO. : 01285, OFFICIAL RECORDS

THE FOLLOWING ITEMS AFFECT PARCEL 30:

(82) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : SEPTEMBER 15, 1980
BOOK NO. : 1281
DOCUMENT NO. : 1240258, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

83. ANY EASEMENT OR LESSER RIGHT FOR THE PURPOSES STATED HEREIN INCLUDING INCIDENTAL PURPOSES DISCLOSED BY A SURVEY OR INSPECTION OF SAID LAND
FOR: POWER LINES
AFFECTS: THE SOUTH 23 1/2 FEET OF SAID LAND

THE FOLLOWING ITEMS AFFECT PARCEL 31:

85. RESERVATIONS AS CONTAINED IN THE PATENT CONVEYING SAID LAND.

86. ANY EASEMENT OR LESSER RIGHT FOR THE PURPOSES STATED HEREIN INCLUDING INCIDENTAL PURPOSES DISCLOSED BY A SURVEY OR INSPECTION OF SAID LAND
FOR: POLE LINES
AFFECTS: ALONG THE SOUTHERLY BOUNDARY

THE FOLLOWING ITEMS AFFECT PARCEL 32:

(88) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : FEBRUARY 27, 1961
DOCUMENT NO. : 230145, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECTS PARCEL 33:

(90) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JUNE 27, 1980
BOOK NO. : 1246
DOCUMENT NO. : 1205255, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

91. ANY BOUNDARY DISCREPANCIES OR RIGHTS WHICH MAY EXIST OR ARISE BY REASON OF A RECORD OF SURVEY:
FILE : 68
PAGE : 99
RECORDED : DECEMBER 21, 1993
BOOK NO. : 931221
DOCUMENT NO. : 01964, OFFICIAL RECORDS

92. A GRANT OF EASEMENT FOR THE PERPETUAL RIGHT OF FLIGHT OVER AND ACROSS SAID LAND AS GRANTED TO CLARK COUNTY BY INSTRUMENT:
RECORDED : JANUARY 18, 1995
BOOK NO. : 950118
DOCUMENT NO. : 00639, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

93. THE TERMS AND PROVISIONS, CONTAINED IN AN INSTRUMENT
ENTITLED : RESTRICTIVE COVENANT RUNNING WITH THE LAND
RECORDED : JANUARY 19, 1995
BOOK NO. : 950119
DOCUMENT NO. : 00874, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

EASEMENTS AND EXCEPTIONS (CONTINUED)

THE FOLLOWING ITEMS AFFECT PARCEL 34:

(95) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : FEBRUARY 24, 1989
BOOK NO. : 890224
DOCUMENT NO. : 00263, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 35:

(97) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 36:

(99) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 37:

(101) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : JANUARY 23, 1997
BOOK NO. : 970123
DOCUMENT NO. : 00353, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 38:

(103) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 22, 1997
BOOK NO. : 970822
DOCUMENT NO. : 00851, OFFICIAL RECORDS

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED AUGUST 22, 1997 IN BOOK 970822 OF OFFICIAL RECORDS AS DOCUMENT NO. 00851.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 39:

(105) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : OCTOBER 1, 1979
BOOK NO. : 1125
DOCUMENT NO. : 1084896, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED OCTOBER 1, 1979 IN BOOK 1125 OF OFFICIAL RECORDS AS DOCUMENT NO. 1084896.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

(106) AN EASEMENT SHOWN BELOW AND INCIDENTAL PURPOSES RELATED THERETO:
FOR : POWER AND COMMUNICATION
IN FAVOR OF : NEVADA POWER COMPANY AND CENTRAL TELEPHONE COMPANY
RECORDED : JULY 11, 1973
BOOK NO. : 345
DOCUMENT NO. : 304096, OFFICIAL RECORDS

REFERENCE TO SAID INSTRUMENT IS MADE FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 40:

(108) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : MARCH 27, 1961
BOOK NO. : 289
DOCUMENT NO. : 234161, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 41:

(110) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : AUGUST 17, 1960
DOCUMENT NO. : 208159, OFFICIAL RECORDS
NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

REFERENCE SHOULD BE MADE TO THE RECORD FOR FULL PARTICULARS.

THE FOLLOWING ITEMS AFFECT PARCEL 42:

(113) RESERVATIONS AND EASEMENTS IN THE PATENT FROM THE UNITED STATES OF AMERICA:
RECORDED : APRIL 11, 1975
DOCUMENT NO. : 468659, OFFICIAL RECORDS

NOTE: SAID PATENT FURTHER RESERVED AND IS SUBJECT TO A RIGHT-OF-WAY NOT EXCEEDING 33 FEET IN WIDTH FOR ROADWAY AND PUBLIC UTILITIES.
AFFECTS : A PORTION OF SAID LAND.

A RIGHT-OF-WAY FOR A FEDERAL AID HIGHWAY, EXACT LOCATION UNDISCLOSED, AS REFERRED TO IN PATENT FROM THE UNITED STATES OF AMERICA, RECORDED APRIL 11, 1975 AS DOCUMENT NO. 468659 OFFICIAL RECORDS.

REFERENCE SHOULD BE MADE TO THE RECORD(S) FOR FULL PARTICULARS.

DATE : 11/8/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
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CONSTRUCTION MANAGEMENT • ADA CONSULTING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146 (702)258-0115

GREEN PARK HOLDINGS, LLC

ALTA/ACSM LAND TITLE SURVEY

SHEET 4 OF 10

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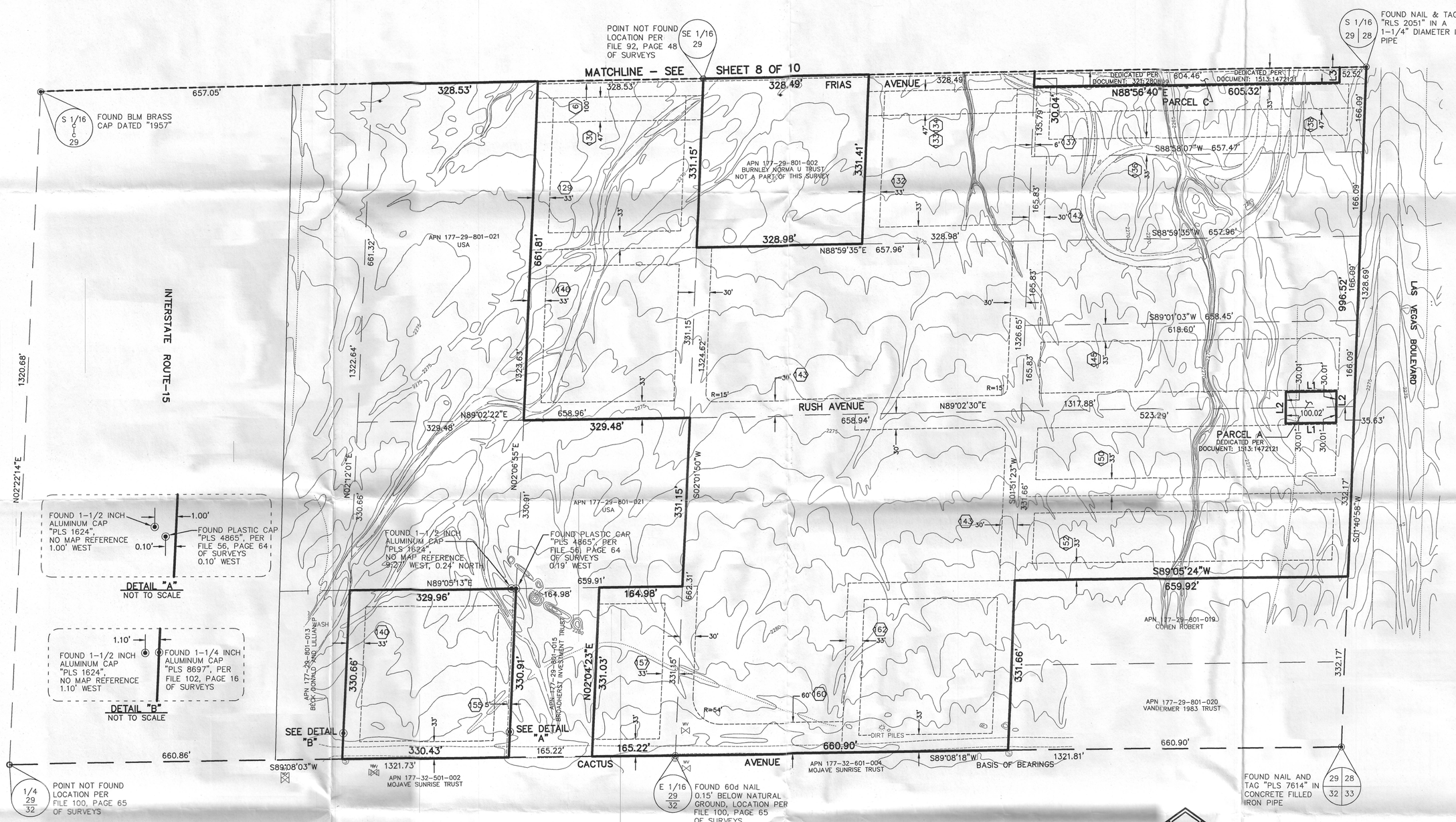
MAR 2 6 2002

ALTA/ACSM LAND TITLE SURVEY

A PORTION OF THE WEST HALF (W 1/2) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA



LINE	BEARING	DISTANCE
L1	N89°02'30"E	100.02'
L2	N00°13'35"E	60.01'
L3	N00°13'35"E	60.02'

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- ALIQUOT PART LINE
- EASEMENT LINE
- ASSESSOR'S PARCEL LINE
- MATCHLINE
- EDGE OF ASPHALT
- CURB AND GUTTER
- DIRT ROAD
- BUILDING
- BLOCK WALL
- CHAIN LINK FENCE
- FOUND MONUMENT AS DESCRIBED
- POINT NOT FOUND OR SET LOCATION PER FILE 92, PAGE 48 OF SURVEYS
- FOUND 1-INCH PLASTIC CAP "RE 2002" PER FILE 70, PAGE 89 OF PARCEL MAPS
- STREET LIGHT
- SIGN
- WV WATER VALVE
- FIRE HYDRANT
- POWER POLE
- S SEWER MANHOLE
- TP TRANSFORMER PAD
- TPN TRANSFORMER PAD (NO TRANSFORMER)
- ELEC ELECTRICAL PULLBOX
- TELE TELEPHONE PULL BOX
- CONC. CONCRETE PAD
- WMH WATER MANHOLE
- APN ASSESSOR'S PARCEL NUMBER
- (4) CURVE DATA
- L1 COURSE NUMBER
- (6) TITLE REPORT EXCEPTION NUMBER

2	REVISED LOCATION OF EXCEPTION NO. 65	03/11/02
1	REVISED AREAS	11/27/00
0	ORIGINAL CERTIFICATION	11/09/00

DATE : 11/6/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

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GREEN PARK HOLDINGS, INC
ALTA/ACSM LAND TITLE SURVEY

SHEET 7 OF 10

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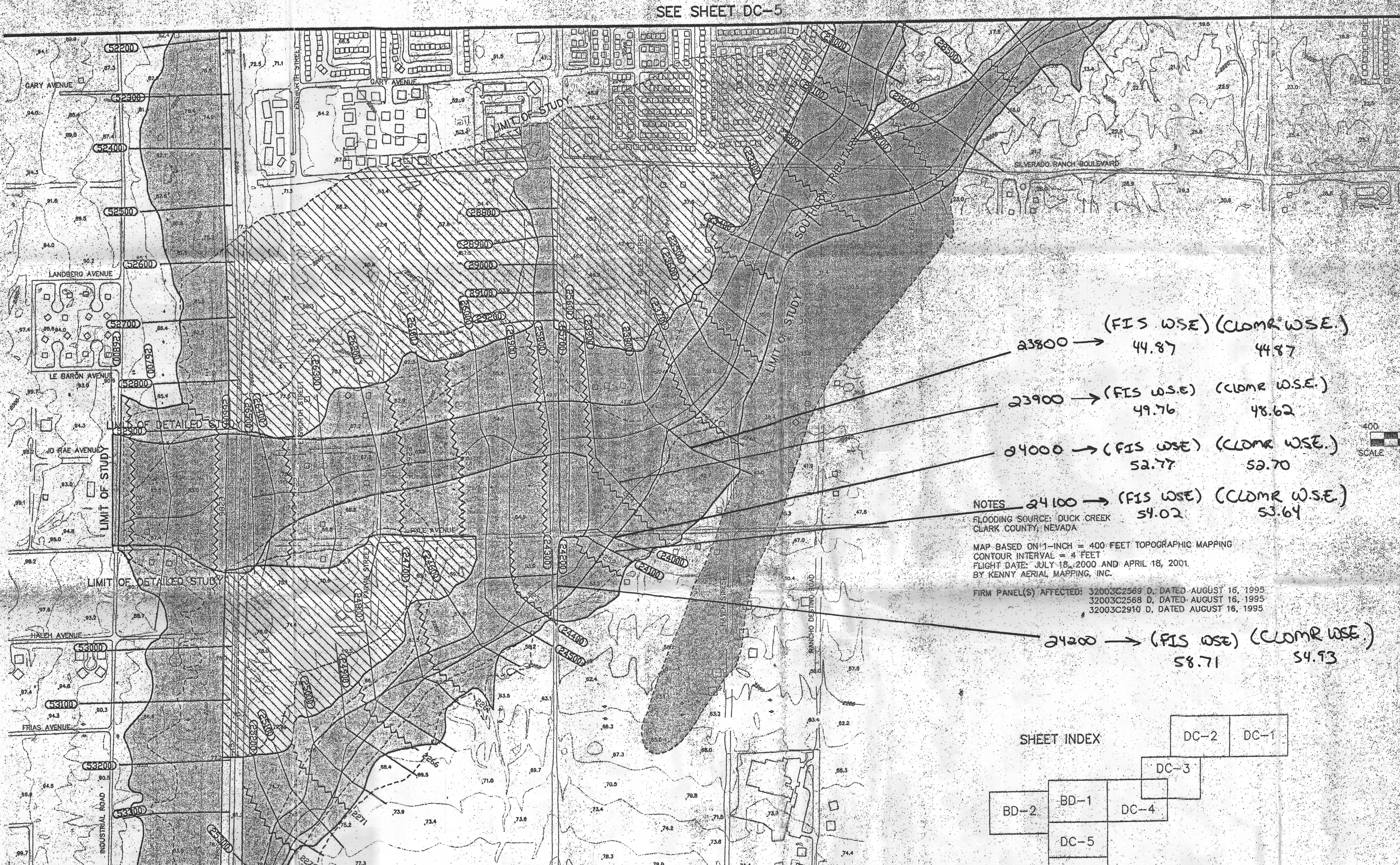
MAR 2 6 2002



RECEIVED
FEB 0 1 2002
STANTEC

South Box Figure 5

DUCK CREEK/ BLUE DIAMOND WASHES FIS RESTUDY
DUCK CREEK FROM I-15 TO RICHMAR AVENUE

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD/LAS VEGAS, NEVADA 89146

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 01-31-02

SHEET
DC-6
6 OF 8

ALTA/ACSM LAND TITLE SURVEY

A PORTION OF THE WEST HALF (W 1/2) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA

POINT NOT FOUND LOCATION PER FILE 92, PAGE 48 OF SURVEYS — N 1/16 C C 29

POINT NOT FOUND LOCATION PER FILE 92, PAGE 48 OF SURVEYS — NE 1/16 29

POINT NOT FOUND LOCATION PER FILE 92, PAGE 48 OF SURVEYS — N 1/16 29 | 28

POINT NOT FOUND LOCATION PER FILE 92, PAGE 48 OF SURVEYS — C 1/4 29

POINT NOT FOUND LOCATION PER FILE 92, PAGE 48 OF SURVEYS — 1/4 29 | 28

FOUND 1/4 INCH REBAR 0.18' WEST, 0.90' NORTH

FOUND 1-1/2 INCH ALUMINUM CAP "PLS 7008", PER FILE 51, PAGE 46 OF SURVEYS

FOUND 1-1/2 INCH ALUMINUM CAP, ILLEGIBLE, LOCATION PER FILE 51, PAGE 46 OF SURVEYS — E 1/16 C C 29

FOUND 1-INCH IRON BAR WITH NO TAG 0.25' EAST

FOUND 1-INCH IRON BAR WITH BRASS TAG "RE 1624" 0.15' EAST

FOUND 60d NAIL 0.35' BELOW NATURAL GROUND

FOUND 1-1/4 INCH PLASTIC CAP "RLS 2984" 0.2' EAST

INTERSTATE ROUTE-15

LAS VEGAS BOULEVARD

LEBARON AVENUE

JO RAE AVENUE

PARVIN STREET

PYLE AVENUE

PARCEL F

PARCEL G — DEDICATED PER DOCUMENT: 1513:1472121

PARCEL H

PARCEL I — DEDICATED PER DOCUMENT: 1513:1472121

NOT A PART OF THIS SURVEY — APN 177-29-602-001 WAKIMOTO KOZUYE AND KAREN N

NOT A PART OF THIS SURVEY — APN 177-29-602-007 HORSE STABLES MONTGOMERY FAMILY TRUST PARCEL 2 FILE 32, PAGE 45 OF PARCEL MAPS

NOT A PART OF THIS SURVEY — APN 177-29-601-002 AD AMERICA INC.

NOT A PART OF THIS SURVEY — APN 177-29-605-001 BROWNING VINCENT LEE PARCEL 1 FILE 64, PAGE 46 OF PARCEL MAPS

NOT A PART OF THIS SURVEY — APN 177-29-605-002 SHOALTS SHIRLEY PARCEL 2 FILE 64, PAGE 46 OF PARCEL MAPS

NOT A PART OF THIS SURVEY — APN 177-29-605-005 ALLEN SOPHIA JAMES PARCEL 1 FILE 70, PAGE 89 OF PARCEL MAPS

NOT A PART OF THIS SURVEY — APN 177-29-605-006 USA

NOT A PART OF THIS SURVEY — APN 177-29-604-007 TZORTZIS VASSILIOS AND MARIA

APN 177-29-604-001 DEDICATED PER DOCUMENT: 1960:30

APN 177-29-604-002 DEDICATED PER DOCUMENT: 320731:842

APN 177-29-604-003 DEDICATED PER DOCUMENT: 1546:1506039

APN 177-29-604-004 DEDICATED PER DOCUMENT: 1941:1800865

APN 177-29-604-005 DEDICATED PER DOCUMENT: 950913:988

APN 177-29-604-006 DEDICATED PER DOCUMENT: 1960:30

DEDICATED PER DOCUMENT: 694198

DEDICATED PER DOCUMENT: 49:39000

SEE DETAIL "A"

SEE DETAIL "B"

CONCRETE WELL PAD

DIRT PILES

GUARD RAIL

WOOD STALLS

649.79' | 641.39' | 1282.78' | 641.39' | 651.40'

N02°23'51"E

N88°44'59"E

N88°13'39"E

N87°57'55"E

N88°05'47"E 295.40'

N88°13'39"E 281.55'

N02°12'53"E

N02°07'28"E

N02°02'06"E

N01°56'51"E

N01°54'14"E

N01°51'38"E

N88°29'20"E

N88°44'59"E

N00°13'35"E

S00°13'35"W

S88°21'30"W

S01°41'22"W

N87°42'09"E

N01°59'28"E

LINE	BEARING	DISTANCE
L1	N00°13'35"E	80.03'
L2	S00°13'35"W	60.06'
L3	N88°44'59"E	100.03'
L4	N87°42'09"E	100.10'
L5	N88°44'59"E	112.03'
L6	N02°02'06"E	134.12'
L7	N87°42'09"E	116.30'
L8	N88°13'39"E	100.06'
L9	N00°13'35"E	60.04'

CURVE	DELTA	RADIUS	LENGTH	TANGENT
1	93°27'54"	20.00'	32.63'	21.25'
2	93°17'08"	20.00'	32.56'	21.18'
3	86°11'32"	15.00'	22.57'	14.03'
4	94°09'29"	15.00'	24.65'	16.13'

DETAIL "A" NOT TO SCALE

DETAIL "B" NOT TO SCALE

NORTH
SCALE: 1" =100'

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- ALIQUOT PART LINE
- EASEMENT LINE
- ASSESSOR'S PARCEL LINE
- MATCHLINE
- EDGE OF ASPHALT
- CURB AND GUTTER
- DIRT ROAD
- BUILDING
- BLOCK WALL
- CHAIN LINK FENCE
- FOUND MONUMENT AS DESCRIBED
- POINT NOT FOUND OR SET LOCATION PER FILE 92, PAGE 48 OF SURVEYS
- FOUND 1-INCH PLASTIC CAP "RE 2002" PER FILE 70, PAGE 89 OF PARCEL MAPS
- STREET LIGHT
- SIGN
- WATER VALVE
- FIRE HYDRANT
- POWER POLE
- SEWER MANHOLE
- TP TRANSFORMER PAD
- TPN TRANSFORMER PAD (NO TRANSFORMER)
- ELEC ELECTRICAL PULLBOX
- TELE TELEPHONE PULL BOX
- CONC. CONCRETE PAD
- WMH WATER MANHOLE
- APN ASSESSOR'S PARCEL NUMBER
- (4) CURVE DATA
- L1 COURSE NUMBER
- (6) TITLE REPORT EXCEPTION NUMBER

NO.	REVISED LOCATION OF EXCEPTION NO. 65	03/11/02
2	REVISED AREAS	11/27/00
1	ORIGINAL CERTIFICATION	11/09/00
0		DATE

DATE : 11/6/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWD
JOB NO. : 1"=100'
SCALE :

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GREEN PARK HOLDINGS, LLC
ALTA/ACSM LAND TITLE SURVEY

SHEET 9 OF 10

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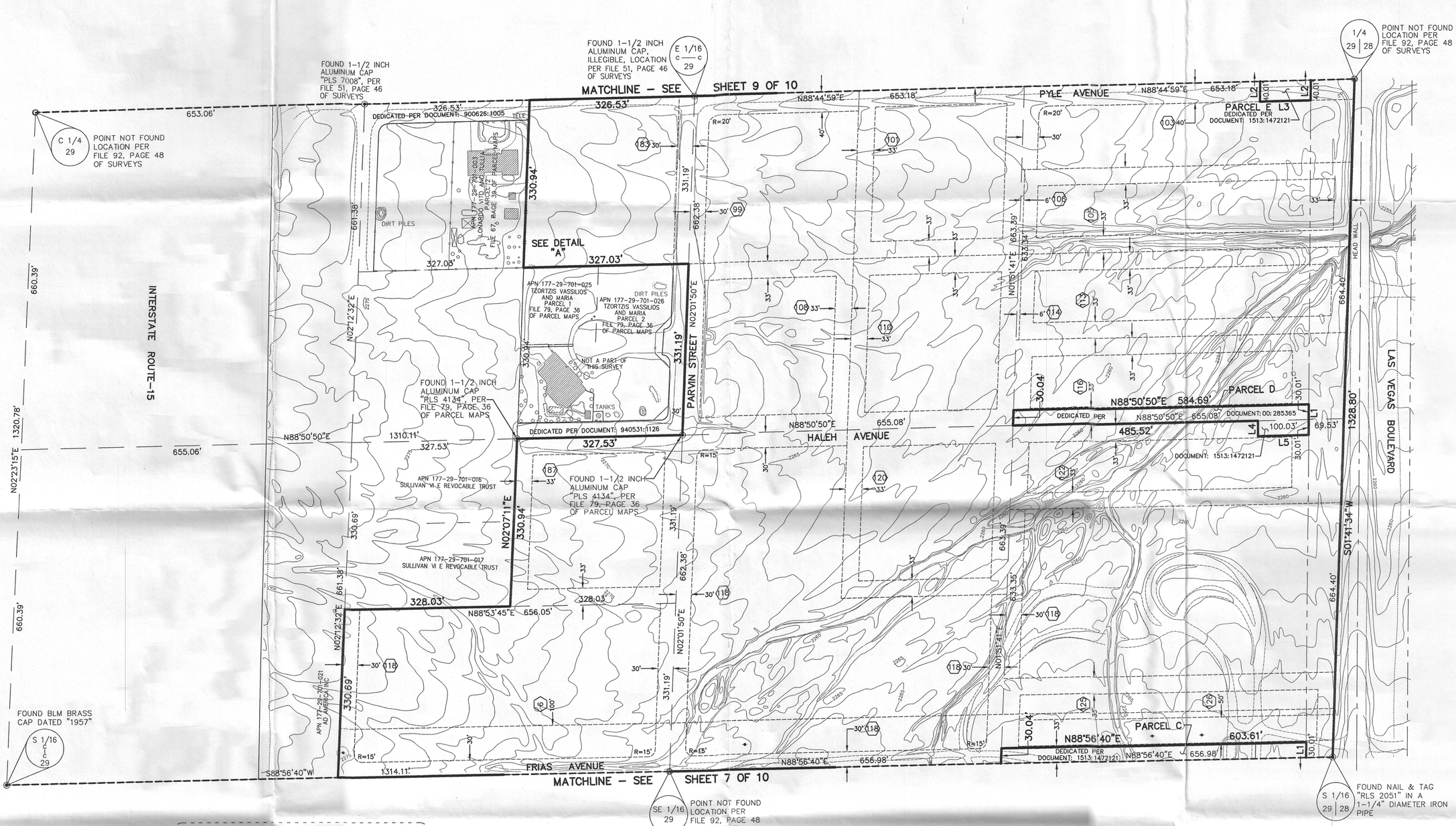
ALTA/ACSM LAND TITLE SURVEY

A PORTION OF THE WEST HALF (W 1/2) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA



DETAIL "A"
NOT SCALE

LINE	BEARING	DISTANCE
L1	N00°13'35"E	60.02'
L2	S00°13'35"W	80.03'
L3	N88°44'59"E	100.03'
L4	N00°13'35"E	30.01'
L5	N88°50'50"E	100.03'

NORTH
SCALE: 1" =100'

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- ALIQUOT PART LINE
- EASEMENT LINE
- ASSESSOR'S PARCEL LINE
- MATCHLINE
- EDGE OF ASPHALT
- CURB AND GUTTER
- DIRT ROAD
- BUILDING
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- FOUND MONUMENT AS DESCRIBED
- POINT NOT FOUND OR SET LOCATION PER FILE 92, PAGE 48 OF SURVEYS
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- STREET LIGHT
- SIGN
- WATER VALVE
- FIRE HYDRANT
- POWER POLE
- SEWER MANHOLE
- TP TRANSFORMER PAD
- TPN TRANSFORMER PAD (NO TRANSFORMER)
- ELEC ELECTRICAL PULLBOX
- TELE TELEPHONE PULL BOX
- CONC. CONCRETE PAD
- WMH WATER MANHOLE
- APN ASSESSOR'S PARCEL NUMBER
- (4) CURVE DATA
- L1 COURSE NUMBER
- (6) TITLE REPORT EXCEPTION NUMBER

2	REVISED LOCATION OF EXCEPTION NO. 65	03/11/02
1	REVISED AREAS	11/27/00

DATE : 11/6/00
P.M. : PD
DRAWN BY :
DESIGNED BY :
CHECKED BY : FWO

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • ADA CONSULTING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146

GREEN PARK HOLDINGS, LLC
ALTA/ACSM LAND TITLE SURVEY

SHEET 8 OF 10

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MAR 2 6 2002

ALTA/ACSM LAND TITLE SURVEY

A PORTION OF THE WEST HALF (W 1/2) OF SECTION 29, TOWNSHIP 22 SOUTH, RANGE 61 EAST, M.D.M., CLARK COUNTY, NEVADA

LINE	BEARING	DISTANCE
L1	N00°13'35"E	60.06'
L2	N87°42'09"E	100.10'

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- ALIQUOT PART LINE
- EASEMENT LINE
- ASSESSOR'S PARCEL LINE
- MATCHLINE
- EDGE OF ASPHALT
- CURB AND GUTTER
- DIRT ROAD
- BUILDING
- BLOCK WALL
- CHAIN LINK FENCE

- FOUND MONUMENT AS DESCRIBED
- POINT NOT FOUND OR SET LOCATION PER FILE 92, PAGE 48 OF SURVEYS
- FOUND 1-INCH PLASTIC CAP "RE 2002" PER FILE 70, PAGE 89 OF PARCEL MAPS
- STREET LIGHT
- SIGN
- WV WATER VALVE
- FIRE HYDRANT
- POWER POLE
- S SEWER MANHOLE
- TP TRANSFORMER PAD
- TPN TRANSFORMER PAD (NO TRANSFORMER)

- ELEC ELECTRICAL PULLBOX
- TELE TELEPHONE PULL BOX
- CONC. CONCRETE PAD
- WMH WATER MANHOLE
- APN ASSESSOR'S PARCEL NUMBER
- (4) CURVE DATA
- L1 COURSE NUMBER
- (6) TITLE REPORT EXCEPTION NUMBER

NORTH
SCALE: 1" =100'

2	REVISED LOCATION OF EXCEPTION NO. 65	03/11/02
1	REVISED AREAS	11/27/00

DATE : 11/6/00
P.M. :
DRAWN BY : PD
DESIGNED BY :
CHECKED BY : FWO
JOB NO. : 0288.0020

PENTACORE
CIVIL ENGINEERING • LAND SURVEYING • PLANNING
CONSTRUCTION MANAGEMENT • ADA CONSULTING
6763 WEST CHARLESTON BOULEVARD
LAS VEGAS, NEVADA 89146 (702)258-0115

GREEN PARK HOLDINGS, INC
ALTA/ACSM LAND TITLE SURVEY

SHEET 10 OF 10

S:\0288\0020\ALTA\02880020-ALTA5.DWG

MAR 2 6 2002

SEE SHEET DC-5

NORTH

SCALE 1" = 400'

400 0 400 800

SCALE FEET

NOTES

FLOODING SOURCE: DUCK CREEK
CLARK COUNTY, NEVADA

MAP BASED ON 1-INCH = 400 FEET TOPOGRAPHIC MAPPING
CONTOUR INTERVAL = 4 FEET
FLIGHT DATE: JULY 18, 2000 AND APRIL 18, 2001
BY KENNY AERIAL MAPPING, INC.

FIRM PANEL(S) AFFECTED: 32003C2569 D, DATED AUGUST 16, 1995
32003C2568 D, DATED AUGUST 16, 1995
32003C2910 D, DATED AUGUST 16, 1995

SHEET INDEX

LEGEND

ELEVATION REFERENCE MARKER

PROPOSED CONDITION FIRM

RECEIVED
FEB 0 1 2002
STANTEC

FEB 2 1 2002

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

DUCK CREEK/ BLUE DIAMOND WASHES FIS RESTUDY
DUCK CREEK FROM I-15 TO RICHMAR AVENUE

SHEET
DC-4
6 OF 8

SEE SHEET DC-5

NORTH

SCALE 1" = 400'

400 0 400 800

SCALE FEET

NOTES

FLOODING SOURCE: DUCK CREEK
CLARK COUNTY, NEVADA

MAP BASED ON 1-INCH = 400 FEET TOPOGRAPHIC MAPPING
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SHEET INDEX

LEGEND

ELEVATION REFERENCE MARKER

EXISTING CONDITION FIRM

RECEIVED
FEB 0 1 2002
STANTEC

FEB 0 5 2002
FEMA

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:

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DUCK CREEK/ BLUE DIAMOND WASHES FIS RESTUDY
DUCK CREEK FROM I-15 TO RICHMAR AVENUE

SHEET
DC-6
6 OF 8